

THE

BRITISH INDIAN

Military Repository,

VOL. V.

[Nos. X. XI. & XII.]

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1827.

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NOTICE TO CORRESPONDENTS.

Observations, by “*a Sufferer*,” on the changes made by Commanding Officers in the uniform of their Officers;—

Remarks on Sir Howard Douglass’ Naval Gunnery, by “*Catapultor* ;”—

Questions on Field Exercise and Evolutions, by “*Simple Simon*,” and “*X. Bengal Native Infantry* ;”—

Illustrations of Torrens, by “*L’avenir Major General* ;”—

Observations on Recruiting in Bundelcund, by “*an Officer* ;”—

Remarks on Supercession occasioned by the Brevet of Captain granted after 15 years service, not including the period which officers serve as Cadets ; by “*a Lieut. H. C.’s Service*,”—

Have all been duly received, but for want of room in our necessarily limited number of pages, which have already been exceeded, could not be inserted in this number : they shall be included in our next.

EDITOR.

CALCUTTA, }
January 1, 1827. }



THE

BRITISH INDIAN

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VOL. V. PART I.

ARTICLE I.

EQUIPMENT OF THE ROYAL ARTILLERY.



REPORT of the SUB-COMMITTEE, appointed for the Purpose of making a Revision of the several Equipments in the Artillery Service, and under each Head reporting such Alterations as they may deem advisable, as directed by the Select Committee, in their Minute of 15th December 1819.

The Sub-Committee, in going through the investigation delegated to them by the Select Committee, have considered that the subjects of it may readily be classed under the following heads:—

1st. The arrangement and equipment of Field and Mountain Artillery.

2d. Of Field Gun Ammunition and Stores.

3d. Of Small Arm Ammunition.

4h. The equipment of a Battering Train of heavy ordnance, including the requisite attending carriages, with the necessary ammunition and stores.

In entering on these subjects, the Sub-Committee have deemed it proper to annex detailed returns of the Establishment of each equipment, adding such memoranda of explanation as appeared to be necessary.

Field Artillery. 1. The Sub-Committee, previous to their report on this subject, beg to recommend that the term •

Field Battery be adopted in the artillery service, as more definite than that of Brigade, for which, under this conviction, they have substituted it in the following report.

Composition of Field Battery. 2. The Sub-Committee has not deviated, in the equipment of field batteries, from the existing organization by five guns and one howitzer, except in the case of the 18-pounder field battery, which is proposed to consist of three guns and one 8-inch iron howitzers, and in the cases of reserve field batteries, where howitzer only may be used; which batteries, when so constituted, will in like manner consist of six pieces, with the other appropriate carriages.

Rounds per gun, and number of carriages. 3. The number of rounds per gun required to sustain an action of some duration, has been assumed as a fair criterion to regulate the ammunition waggons to accompany a battery of each nature, independent of reserves.

This is shewn in Table No. 1. which contains:—

1st. The nature of ordnance composing each battery.

2d. The number of rounds per gun and howitzer.

3d. The ammunition waggons required to carry the quantity; and,

4th. The number and application of the carriages attendant upon the battery.

Distribution of ammunition. 4. In revising the distribution of ammunition in the limbers and waggons, and adhering strictly to the uniformity of packing, and to the power of substituting one limber, or one wagon, for another, the Sub-Committee, having considered the present proportion of case shot as too great, some diminution of it has taken place. This has permitted a small increase of the total number of rounds carried into the field. The case shot retained is proposed to be of one kind only, viz. for guns of 41 balls in tiers, and for howitzers of not less than 4 oz. balls.

It being considered that the spherical case is less efficient in the lower natures, and altogether useless with the 3-pounder, the average proportion of spherical case to the total number of rounds, is proposed to be nearly as follows.

12-Pounder-, One third of total.

8-inch howitzers, 24 and 12-pounders, One half.

9-Pounders, One fifth.

Heavy 6-Pounders, One seventh.

Light 6-ditto, One eight.

Table No. 2 is explanatory of this.

Principles on which the Bat-
teries are horsed. 5. In forming the several general scales of equipment for field batteries, (vide Tables No. 4 to 17,) the Sub-Committee have been governed by one general principle in horsing, viz. that for foreign service.

Every 18-pounder and 8-inch howitzer requires 10 horses.

Every 12, 9, and heavy 6-pounder, 24-pounder howitzer, and heavy 5½ howitzer, 8 horses.

Every light 6-pounder, heavy 3-pounder gun, light 5½ and 12-pounder howitzer, 6 horses.

And all other carriages belonging to a field battery, 6 horses.

As these numbers exceed those of the establishment fixed in 1807, though proved from subsequent experience to be required, the Sub-Committee think it necessary to state the grounds on which they have been adopted; observing at the same time, that the equipments for *home service* are kept as low as possible, on the supposition of fixed stationary districts as heretofore, but with the acknowledged proviso, that in the event of actual warfare, they must be increased to the *foreign* scale.

Reasons for adopting these principles. 6. It is not that in entering on a campaign six horses are absolutely necessary for drawing each carriage; nor that, if travelling great roads, with good stabling and forage, such a number might be necessary at all. But when the whole of the animals are exposed to the weather day and night; traversing a country in all directions, whatever may be its nature, and with perhaps but a precarious supply of forage, in quantity as well as quality; and having also occasionally, after a hard day's march, to seek the same for miles:—in such cases, the powers of the animal, with every care, will be brought down in a short time to a much lower scale than under other circumstances might be reckoned upon.

If a difference of horses be proposed between the carriages which go into the first line in the field, and those for its immediate supply or general utility; that is, between the gun and one waggon to each, and the remaining ammunition and other carriages; it is considered that a nominal and not a real saving would be made, from the over-work thrown on the latter carriages, causing very shortly greater expenditure of the horses than might otherwise be expected. For,

In allotting horses to a battery, the best are of course placed to the guns and ammunition waggons in first line, the next best to the spare ammunition, and the remainder to the forage spare carriages. The carriages in the first line must be at all times kept complete, and what can be supplied from the spare, must be from some of the rear carriages. The consequence is, that the rear carriages, and more especially those which do not convey ammunition, become weakened from the draft in the course of the campaign, and unable to perform the duties required of them.

If it be urged that the rear carriages are not always close up with the operating part of the army, and by travelling great roads are not liable to so much fatigue, and therefore do not require so full an equipment: the answer is, that the ammunition carriages must always be at hand in the day of action, though in the rear; must consequently in great measure travel over the same ground, and must be capable of full exertion in conveying the ammunition when called for. They are otherwise of no use. The opportunity is lost. The gun is without ammunition, and may even be in danger after expending its stores, before a supply can be got up. That the other carriages are always at such times liable to an over-weight from a part of the forage on hand, from which the carriages in first line must be disencumbered; which forage would otherwise be lost, and the want of it reduce the condition of the horses. But the march of an army is not always made by great roads, but frequently by such as marked out on the occasion by the Quarter-Master General's department across the country. Here the weaker carriages, by

being in the rear, suffer most : what at first was perhaps but a bad road, becomes a slough ; and where the first carriages, well horsed, get through without much difficulty, becomes perhaps unpassable for those in the rear without the aid of each other's leaders, thereby causing delay, overwork of the horses, and consequent expenditure of them.

Nor is the difference of equipment, in this latter view of the case, to any extent, being only 13 horses for a 9-pounder battery, viz.

Forge, store waggons, and spare carriages, . .	6	horses.
Three ammunition waggons, 2 each	6	„
Spare horse,	1	„

13 horses.

The saving of which small number in first equipment would, it is considered, be likely to entail a much greater and constant demand for remounts, and be the cause ultimately of more detriment than advantage to the service.

These observations have not been made exclusively from experience gained in the late Peninsular campaigns, but also from those on the continent, at the commencement of the late war ; the batteries then formed by the late Lieutenant General Sir William Congreve, with the present mode of carriage introduced by him, and also those constituted at Bremen in 1795, being all arranged with six horse draft for rapid movement, in consequence of the experienced inadequacy of a smaller number in the improved operations of field artillery. And although the artillery of the late army of occupation in France was on a reduced establishment, from motives of economy, yet the Sub-Committee, from past experience, are persuaded that an increase of equipment must have taken place, in the event of actual warfare.

The Sub-Committee have more dwelt upon this principle of horsing the carriages of field artillery, from its having met with the sanction of the late Master General and Board, in consequence of the strong support it received from the Director General of the Field Train, in his official transmission of a report called for by him in the commencement of the year 1813.

The Sub-Committee are further desirous of preventing the recurrence of a necessity for any officer, who may in future be placed in command of artillery in continental campaigns, deviating materially from equipments established by authority, which some officers have found themselves constrained to do, under great and to them very serious responsibility; or for their being reduced to the mortifying necessity of requiring aid from the infantry, ever reluctantly given, and not always attainable, for those powers of movement which every arm ought at all times to possess within itself.

Such are the reasons which have governed the Sub-Committee in forming the establishments of the several batteries in point of horses for draft, and have determined the appropriation of non-commissioned officers, drivers, and artificers of the Train Division, so as to keep the number of *riding* horses as low as possible, and to confine them to such persons only, as were absolutely necessary. The application of pack horses for baggage has been made, in substitution for the two camp equipage waggons included in former equipments, and is taken from the practice in the Peninsula: the number of horses or mules being the same, it is considered more analogous to the movements of field batteries in all countries, the only addition being two drivers.

N. C. Officers, 7. The Non-Commissioned Officers, Drivers, and Artificers. N. C. Officers, Drivers, and Artificers have been, as is already stated, kept as low in point of numbers as the duties which each class has to perform would permit. With respect to artificers, the shoeing smiths have been taken at one to about forty horses; the other artificers generally at two of each per battery, from the obvious inconvenience to an equipment on service, in the event of the only one being sick. Had the principle established by the Duke of Richmond, when Master General of the Ordnance, that each company of artillery should have certain artificers in the number of gunners, been more acted upon, the same could have been obtained, and the necessity for two in the train be avoided: as would also be the appropriation

of civil artificers accompanying any reserves; the inconveniences and great expense attending this class of men on a command entirely military having at all times been severely felt.

The number of Officers, Non-Commissioned Artillery one Company per Battery. officers, and Gunners of artillery in the scale established in 1807, being much too low for any field battery consisting of six pieces of ordnance, and that scale having been formed on the supposition that one company of artillery, and one division of drivers sufficed for two batteries, leaving no source from whence sickness or casualties could be replaced, has from experience been found altogether inadequate. The Sub-Committee have therefore assumed the principle, that one company of artillery, consisting of 5 officers, 1 company serjeant, and 2 other serjeants, 3 corporals, 6 bombadiers, 2 drummers, and 90 gunners, is not more than adequate to the service of a 9-pounder battery, being that in most general present use. That as a 12-pounder battery will require a few more men to work the guns, and as a light 6-pounder may be worked with a less proportion, they have adhered to the principle of a company per battery, generally, leaving any allotment of a few men from the smaller to the larger nature of battery as a matter of interior arrangement, according to the natures of ordnance which an officer commanding artillery in the field may have under his orders. Table No. 3 shews the distribution of the company to the several duties required with any field battery. That of the train division will appear by the scales No. 4 to 9, without other reference.

Why the Company and Train Division are separately organized. 8. It is considered, from the nature of the service to which companies of artillery in the British service are liable, and the consequent varieties of manner in which foreign field commands are subject to be called together, more especially on occasions requiring secrecy and dispatch, that the company of artillery and the division of drivers, which when called together form one constituted body attached to a field battery, must in some measure be kept in distinct interior formation, more especially as they are both

liable to separation on emergencies of service, as for sieges on the one hand, and on the other for reserves of ammunition for pontoons, &c. and that therefore the equipment of a field battery will take a few more non-commissioned officers and soldiers than it might require, if formed into one body constantly acting together, as in the service of most of the continental powers of Europe, or in the horse artillery in our own, where the duties of each class are in great measure reciprocal.

Staff Serjeant 9. While mentioning artillery on foreign
wanted, compa- service, the Sub-Committee beg to remark
ny Serjeant ap- the want of a staff serjeant to act as serjeant-
plicable. major to the battery, and to point out the present compa-
ny serjeant as highly eligible to these duties, from his cha-
racter, and the addition which he receives to his pay. On
this idea, a horse has been included for the serjeant-
major in the scale of equipment.

Drummers, sug- 10. It may possibly not appear requisite to
gestions relative to have two drummers with a company,—when
them. joined in field duties with a train division which has a
trumpeter. But as one trumpeter has been found inade-
quate to the duties of a field battery, and the drum as an
instrument is inapplicable to artillery service, since it can
neither be carried about with, nor heard by a field battery
in movement, it is suggested that the drummers should
be taught the use of the bugle, so as to make them of use
in the field, and that they should not be sent on service
under an age at which they can bear the fatigues of a
campaign.

As artificers of several trades are indispensably neces-
sary in the artillery service, in all situations, the Sub-Com-
mittee cannot but consider that it would be of benefit to
the service if the drummers could be taught those trades,
which might easily be accomplished by degrees in his
Majesty's arsenal.

Arms of Artil- 11. The Sub-Committee beg to remark, that
lerymen. the sword with which the artillerymen are
now armed is in itself a very inefficient weapon for any
purpose; and as the men are now ordered to be taught the
sword exercise, in which a better weapon is used, they

would recommend the adoption of that description of sword instead of the present pattern.

Arms for Drivers. They also are decidedly of opinion, that some defensive weapon is necessary for the artillery Drivers, whose situation in action is arduous, and often much exposed to attack. This has already been adopted by the other nations of Europe, and is highly desirable in the British service, whether considered in its moral or physical effect.

Horse Artillery. 12. In examining the war establishment of the horse artillery, the Sub-Committee has considered that the adoption, of late years, of heavier ordnance than originally proposed, has induced a necessity for increasing the number of men per gun, both mounted and dismounted.

Without determining the question of the propriety of mounting the *whole* of the gunners, to which the Sub-Committee feel much disposed, instead of carrying any on the carriages as at present, they have taken the mounted detachments at two non-commissioned officers and eight gunners per gun. The experience of the late war, in which this arm has been much and efficiently employed, has proved that the numbers, especially of drivers, borne on the establishment by his Majesty's warrant, are not adequate to the performance of the duties required; detachments having been added from the other branches of the artillery service to the scale of equipment for each troop. The want also of non-commissioned officers of drivers, who have hitherto been constantly borrowed from the Train, to the exclusion of drivers of horse artillery, has been severely felt on service: with the view of remedying this evil, and of at once providing for the performance of duties equally necessary in the horse artillery battery as in any other field battery, and of holding out the proper encouragement to deserving drivers now shut out from the hope of promotion in their corps, a small proportion of this class of non-commissioned officers has been inserted in the scales No. 14 to 17, proposed for the future equipment. It will be seen, by comparison of these scales with those of field batteries, that little other difference will

exist between the two than what is consequent on the nature of mounted or dismounted, or of foot and horse artillery.

In quitting this subject, the Sub-Committee cannot refrain from expressing their opinion, that his Majesty's service would be benefitted if the drivers for the whole of the artillery service were formed on one establishment, were in all respects similarly clothed and equipped, and were all equally eligible, when deserving, to promotion.

Perhaps this principle might be carried further, so as to bring the establishment of horses as well as drivers under one general arrangement, the horses to be afterwards selected as the several branches of the service may require.

13. With respect to the equipment of smaller ordnance for local circumstances, the Sub-Committee have put together scales for the light 3-pounders of 4 feet and coehorn howitzer, on carriages of single draft, with carts for ammunition, and also for the 1-pounder amuzette; these pieces being considered especially adapted to the West Indies, and other island services, where the limited movements they may have to make must be regulated by the draft of mules, or by the assistance of men. For these the Sub-Committee have merely given the outlines of a scale, leaving the means of movement to be regulated by circumstances.

For mountain service, the Sub-Committee have put together scales of the two modes in most frequent use of the 3-pounders and coehorn howitzer of that construction, viz. the one by pack carriage altogether, and the other by draft, a shaft carried by a mule attaching to the trail of the gun carriage.

Of these two modes, preference is given to the latter, as being easier for the mules, more readily brought into, and taken out of action, and as conveying more ammunition with the same powers, and being able to move in almost any road on which the former is capable of being transported.

Harness. 14. With regard to harness, the Sub-Committee beg to observe, as an arrangement is going on in the car-

riage department for improving harness, they do not deem it necessary to make any observation on the subject at present, beyond expressing their belief that the greatest advantage will be obtained by the simplification of harness now in progress.

Mode of supplying horse shoes. 15. The Sub-Committee, in considering the improvement which has of late years taken place, both in the mode of supplying the very necessary article of horse shoes for the artillery service, and in the quality of the article itself; nevertheless beg strongly to recommend, that when horses are sent on foreign from home service, the month's consumption of shoes, or one set per horse, which the farriers at home are expected to have ready fitted to the horses, may be permitted to be received into store; or in other words, that while such shoes last, the farrier may continue to receive the half-penny per day per horse which is allowed by government to farriers on home service. This or some similar arrangement would prevent the loss now incurred by farriers, and would ensure the horse being well shod at the beginning of a campaign, as every soldier would in that case carry with him one set of shoes ready fitted to his horse. These shoes, according to the existing arrangement, being the private property of the farriers, are returned to, and probably sold by him to disadvantage, at the very moment when they are likely to be of most use.

A rule to continue the farriers' allowance for one month after debarkation would meet the spirit of this suggestion.

Proportions of Stores for 2 and 6 months: consumption for Field Batteries, No. 18, 19, and 20. 16. The Sub-Committee have drawn out the proportion of ammunition and stores which in their opinion should accompany field guns and howitzers of each nature;

and have added a proportion of stores which they consider as equal to a two months consumption for a field battery under ordinary circumstances, and as proposed to be carried in the store waggon attached to each battery. And also another proportion supposed adequate to six months further supply, and to remain in dépôt.

These proportions are classed in the order in which it appears to the Sub-Committee that returns of field ord-

nance should in future be made out. This order, as will appear in a subsequent part of this report, is also adhered to in the detail of ordnance and stores for a battering train.

Field Artillery 17. With a view of further shewing the equipment for a scale of field artillery considered necessary by the Sub-Committee, they have & C. referred to assumed a distribution of artillery sufficient therein.

to place on an establishment a corps similar to that of the late army of occupation in France, (No. 21,) and have followed the subject through its various details, so as to shew at one view all that, in their opinion, can be required in men, horses, ammunition, and stores. As this necessarily includes the consideration of small arm ammunition, the observations on that head will be found in a subsequent part of the report.

Articles of Stores 18. With respect to such articles of ammunition or stores as the Sub-Committee consider that it would be advisable either to discontinue or to modify, they reserve their observations till the conclusion of their report, when the subject of such articles of battering train equipment as may appear to require revision shall come under consideration.

Duties of Artillery Officers attached to drivers when with field batteries. 19. The Sub-Committee, considering it to be very essential that a fixed principle should be established with regard to the duties of officers of Royal Artillery drivers when serving with field batteries, beg to submit the following regulations on the subject.

The officer attached to the drivers of a field battery to have charge of the accounts of the same, taking care the detachment is properly supplied with appointments and necessaries, and kept as complete as possible.

In exercising this duty, he is of course subject to the inspection and control of the officer commanding the battery, who will at least once a month examine the account books, state of debts and credits, &c. in order to ascertain that the service is carried on in a proper manner, and to his satisfaction.

A battery with its men and horses to be always formed in three divisions, each under the command of an officer; but the officer of drivers should not have charge of a division, except when the company is incomplete in subalterns.

The driver officer is to sit on courts-martials in his turn, and also to take his share of such other general service of the battery as the officer commanding the battery may consider necessary.

He commands of course on all parades, when senior officer, as he will also the battery, when the officers senior to him are absent on leave or otherwise.

(Signed,) WILLIAM MILLAR,
Colonel, Royal Artillery.

„ WILLIAM ROBE,
Colonel, Royal Artillery.

„ AUG. FRAZER,
Lieutenant Colonel, Royal H. Artillery.

„ A. DICKSON,
Captain, R. H. Artillery, and Lieut. Colonel.

WOOLWICH, }
10th April, 1820. }

TABLE, No. I.

Number and Species of Carriages of which a Horse Artillery or Field Battery is composed.



	Field Batteries.						Colonial Mountain Howitzer.				
	18 pr. 8 in. iron	12 pr. 24 pr. or hy. 5½	9 pr. 24 pr. or hy. 5½	hy. 6 pr. 24 pr. or hy. 5½	lt. 6 pr. 12 pr.	hy. 3 pr. 12 pr.	3 pr. of 4 feet, Coehorn.	1 pr. average, Coehorn.	lt. 3 pr. draft, Coehorn.	lt. 3 pr. mules, Coehorn.	24 p.how.
Nature of Battery,
Nature of Howitzer,
Rounds per Gun,	..	162	178	163	230	220	80	165	168	120	..
Rounds per Howitzer,	..	112	144	144	144	220	80	0	96	72	..
Number of Guns,	..	3	5	5	5	5	3	4	3	3	0
Number of Howitzers,	..	1	1	1	1	1	1	0	0	0	0
Gun Ammunition Waggon,	..	9	10	7	6	6	6	0	0	0	0
Howitzer Ammunition Waggon,	..	4	2	2	2	2	2	0	0	0	0
Spare Carriage,	..	1	1	1	1	1	0	0	0	0	0
Forge Waggon,	..	1	1	1	1	1	0	0	0	0	0
Store Waggon,	..	2	2	1	1	1	0	0	0	0	0
Store Cart,	..	1	1	1	1	1	0	0	0	0	0
Platform Wagon,	..	1	0	0	0	0	0	0	0	0	0
Total Carriages,..	23	23	19	18	18	17	12	0	0	0	0

The Sub-Committee, understanding that in consequence of the recommendation of the Select Committee, His Grace the Master General has approved of the 24 and 12 pr. Howitzers, has substituted these pieces of ordnance instead of the heavy and light 5½ Howitzers hitherto used: the calculations will equally apply to the Howitzer of the old, as to those of the new constructions.

TABLE, No. 2.

Ammunition which can be carried in the Boxes of Field Guns and Howitzers; with the Number of Waggon required to convey the Proportion of Ammunition judged necessary to accompany every Battery.

FIELD BATTERIES.

				Round.	Case of 41 Balls.	Spher. Case.	Total.		
18-Pounder Iron or field carriages.									
1st Waggon	{	Limber	2 Boxes..	12	6	6	24	162 Rounds per Gun. 9 Waggon per battery.	
			{	Fore .. Hind..	9	0	6		15
					15	0	0		15
				36	6	12	54		
2d Waggon	..	..	..	36	6	12	54	
3d Waggon	..	..	..	42	0	12	54	
Total per Gun..				114	12	36	162		
Medium 12 pounder Brass.									
Gun		Limbers	2 Boxes..	6	6	6	18	178 Rounds per Gun. 10 Waggon per battery.	
Waggon	{	Limber	2 Boxes..	18	4	10	32		
			{	Fore .. Hind..	18	0	6		24
					14	0	6	24	
				60	10	28	98		
2d Waggon	..	..	..	54	5	22	80	
Total per Gun..				114	14	50	178		
9 Pounder Brass.									
Gun		Limber	2 Boxes..	16	8	8	32	163 Rounds per Gun. 7 Waggon per battery.	
Waggon	{	Limber	2 Boxes..	16	8	8	32		
			{	Fore .. Hind..	22	0	8		30
					32	0	0	32	
				86	16	24	126		
2 Waggon for the 5 Guns.									
R.	C.	Sph.	Total.						
146	16	32	188. Per Gun	28	3	6	37		
Total per Gun..				114	19	30	163		

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FIELD BATTERIES continued.

<i>Heavy 6 Pounder.</i>		Round.	Case 41 Balls.	Sphrl. case.	Total.	
Gun	Limber 2 Boxes...	30	10	10	50	230 Rounds per Gun. 6 Waggon per battery.
Waggon	{ Limber 2 Boxes...	30	10	10	50	
	{ Body { Fore.	40	0	10	50	
	{ Hind.	50	0	0	50	
One waggon for the 5 Guns. ..		150	20	30	200	
Round. Case. Sph. Total.						
120	10 20 150. Per Gun.	24	2	4	30	
Total per Gun..		174	22	34	230	
<i>Light 6 Pounder.</i>						
Gun	{ Axletree 1 Box .	3	3	0	6	220 Rounds per Gun. 6 Waggon per battery.
Waggon	{ Limber 2 Boxes ..	24	8	8	40	
	{ Limber 2 Boxes ..	32	8	8	48	
	{ Body { Fore.	40	0	10	50	
	{ Hind.	50	0	0	50	
One waggon for the 5 Guns.		149	19	26	194	
R. C. S. Total.						
114	8 18 140. Per Gun.	23	1	3	26	
Total per Gun..		171	20	29	220	
<i>Heavy 3 Pounder.</i>						
Gun	{ Axletree 1 Box	4	4	None	8	316 Rounds per Gun. 5 Waggon per battery.
Waggon	{ Limber 2 Boxes ..	50	20	..	74	
	{ Limber 2 Boxes ..	50	20	..	70	
	{ Body { Fore.	84	0	..	80	
	{ Hind.	84	0	..	84	
Total per Gun..		272	44	None	316	

<i>8-Inch Howitzer Iron.</i>		Sphr.	Shell.	Case.	Cars.	Total.	
Waggon	{ Limber 2 Boxes.	6	6	0	0	12	112 Rounds per How- itzer. 4 Waggon to each.
	{ Fore....	5	3	0	0	2	
	{ Body { Hind ..	2	3	0	0	8	
		13	12	3	0	28	
Three other Waggon similar.		39	36	6	0	84	
Total per Howitzer.		52	48	12	0	112	

FIELD BATTERIES, continued.

				Sphr.	Shell.	Casc.	Car-case.	Total.	
<i>24-Pounder Howitzer Brass, or Heavy 5½ Howitzer*.</i>									
Howitzer	Limber	2 Boxes.		12	8	4	0	24	144 Rounds per Howitzer. 2 Waggon to each.
	Limber	2 Boxes.		12	8	4	0	24	
Waggon	Body	{Fore....		8	8	0	2	18	
		{Hind ..		10	8	0	0	18	
				42	32	8	2	84	
Second Waggon.	..	..	..	30	24	4	2	60
Total per Howitzer ..				72	56	12	4	144	
<i>12-Pounder Howitzer.</i>									
Howitzer	Limber	2 Boxes.		20	12	4	0	36	220 Rounds per Howitzer. 2 Waggon to each.
	Limber	2 Boxes.		20	19	4	0	36	
	Body	{Fore....		12	12	0	4	28	
		{Hind ..		16	12	0	0	28	
				68	48	8	4	128	
Second Waggon	..	..	..	48	36	4	4	92
Total per Howitzer..				116	48	12	8	220	

* The light 5½ Howitzer, from its small velocity and uncertainty of range, is of late disused.

BATTERIES FOR COLONIAL SERVICE.

				Round	Casc.	Total.	
<i>Light 3-Pounder of 4 Feet, to travel single Hored.</i>							
Gun	Limber	1 Box..	..	21	9	30	150 Rounds per Gun. Six Cars per Battery.
Car		{1st Box	..	21	9	30	
		{2d Box	..	30	0	30	
				72	18	90	
Second Car	..	..	..	51	9	60	
Total per Gun..				123	27	150	
<i>1-Pounder Amuzette with Limber to travel single Hored.</i>							
Gun	Limber	1 Box..	..	40	15	55	165 Rounds per Gun. 4 Cars per Battery.
Car		{1st Box	..	55	0	55	
		{2d Box	..	55	0	55	
Total per Gun..				150	15	165	
<i>4½ or Cochorn Howitzer, single Draft.</i>				Shell.	Casc.	Total.	
Howitzer	Limber	1 Box,		12	4	16	80 Rounds per Howitzer. 2 Cars to each.
Car	..	{1st Box,....		12	4	16	
		{2d Box,....		16	0	16	
				40	8	48	
Second Car	..	..	..	28	4	32	
Total per Howitzer,..				68	12	80	

BATTERIES FOR MOUNTAIN SERVICE.

<i>Light 3-Pr. of 2½ Cwt. Mountain, carried on Mules' back.</i>	Round	Case.	Total.	
1 Mule to carry the gun.				
1 Do. for the carriage.				
1 Do. 2 Boxes, . .	51	9	60	120 Rounds per gun.
1 Do. 2 Boxes, . .	51	9	60	12 Mules per battery.
4 Mules. Total per Gun,	102	18	120	
<i>Light 3-Pr. of 2½ Cwt. Mountain, with shaft hooked to the Trail.</i>				
2 Mules in length, each carry- ing 2 Boxes.				
With 10 rounds 2 case, 4 Boxes,	40	8	48	168 Rounds per Gun.
1 Mule with ammunition 2 Boxes,	51	9	60	12 Mules per Battery.
1 Do. do. 2 Boxes,	51	9	60	Do. do.
4 Mules. Total per gun,	142	26	168	
<i>4½ Coehorn Howitzer Mountain, carried on Mules' back.</i>	Shell.	Case.	Total.	
1 Mule to carry the Howitzer				
1 Do. for the carriage.				
1 Mule with ammunition, 2 Boxes	20	4	24	72 Rounds per Howit-
1 Do. do. 2 Boxes,	20	4	24	zer. Five Mules to
1 Do. do. 2 Boxes,	20	4	24	each.
5 Mules. Total per Howitzer,	60	12	72	
<i>4½ Coehorn Howitzer Mountain, with Shaft fixed to Trail.</i>				
2 Mules in draft carrying 4 Boxes,	20	4	24	95 Rounds per Howit-
3 Mules carrying 2 boxes each, 6 boxes,	60	12	72	zer. Five Mules to
5 Mules. Total per Howitzer,	80	16	96	each.

TABLE No. 3.

Strength and Disposal of a Company of Artillery for Field Service.

A Company of Artillery, as usually sent on Foreign Service, consists of

Captain.	2d Captain.	1st Lieut.	2d Lieut.	Sejeants.	Corporals.	Bombadiers.	Gunners.	Drummers.	Total.
1	1	2	1	3	3	6	90	2	109

Leaving an Establishment at home, applicable to Recruiting, Drill, Field and Staff Officer's servants, Office Clerks, and other duties

Of these the following will be the usual appropriation.

	Captain.	Subalterns.	Sejeants.	Corporals.	Bombadiers.	Gunners.	Drummers.	Total.
1 N C. Officer and 10 men per gun, forming six subdivisions,	0	0	0	0	6	60	0	66
3 Divisions of two guns each, and for general service of the battery,	2	3	1	2	0	0	1	9
To act as Sergeant Major,	0	0	1	0	0	0	0	1
Officers' Servants, including the Surgeon,	0	0	0	0	0	6	0	6
	2	3	2	2	6	66	1	82
With the waggon division, consisting of the forge, spare carriage, store waggon, and the ammunition not taken into first line,	0	0	1	1	0	24	1	27
Total,	2	3	3	3	6	90	2	109

OF THE 24 GUNNERS WITH THE WAGGON DIVISION.

					{	Tailors,	1 or 2
					{	Shoemaker,	1
These are occasionally employed as	..	..			{	Wheeler,	1
					{	Collarmaker,	1
					{	Smith,	1
Guard, and occasional Escort to small arm ammunition,							3
Recommended men for promotion, generally acting as Bombadiers,							2
Occasional Escorts of ammunition from the Depot,							3
To replace casualties in the Gun detachments, which must be kept always complete,	..	..	..	..			11
Total,							24

ROYAL ARTILLERY.

[illegible]

TABLE No. 8.
Establishment of a Light 6-Pounder Field Battery.

FOREIGN SERVICE.													HOME SERVICE.															
Each Light 6 Pounder having one Waggon carries 194 Rounds per Gun. 12 Pounder Howitzer do. 128 per Howitzer. One 6-Pr. and one Howitzer Waggon additional, .. 29 .. 92 Total, 223 per gun. 220 per Howitzer.													Each Light 6 Pr. and one Waggon, .. 194 12 Pr. Howitzer do. .. 128 (No additional Waggon.)															
Number.	R. Artillery.					R. A. Drivers.					Horses and Mules.			R. Artillery.					R. A. Drivers.					Horses and Mules.				
	Officers.	N. C. Officers and Drummers.	Gunners.	Total.	(Officers.	N. C. Officers and Trumpeters.	Artificers.	Drivers.	Total.	Draft.	Riding.	Baggage.	Total.	Officers.	N. C. Officers and Drummers.	Gunners.	Total.	(Officers.	N. C. Officers and Drummers.	Artificers.	Drivers.	Total.	Draft.	Riding.	Baggage.			
5	Light 6 Pounders, ..	0	0	0	0	0	0	0	0	15	30	0	0	30	5	0	0	0	0	0	0	0	10	10	20	0	0	20
1	12 Pounder Howitzer, ..	0	0	0	0	0	0	0	0	3	6	0	0	6	1	0	0	0	0	0	0	2	2	4	0	0	4	
5	6 Pounder ammunition Waggon, ..	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Do. do. additional, ..	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	24	0	0	24	
1	12-Pounder Howitzer Waggon, ..	0	0	0	0	0	0	0	0	24	48	0	48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Do. do. additional, ..	0	0	0	0	0	0	0	0	3	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Light 6-Pounder Spare Gun carriage, ..	0	0	0	0	0	0	0	0	3	3	0	3	0	0	0	0	0	0	0	0	2	2	4	0	0	4	
1	Forge Waggon, ..	0	0	0	0	0	0	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Store Waggon, ..	0	0	0	0	0	0	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Store Cart, ..	0	0	0	0	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Camp Equipage Waggon, ..	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	4	0	0	4		
18 Total Carriages.													14															

TABLE No. 8. continued.

ROYAL ARTILLERY.									
2	Captains,	2	0	0	2	0	0	0	0
3	Subalterns,	3	0	0	3	0	0	0	0
1	Surgeon, (additional horse for Medic.)	1	0	0	1	0	0	0	0
3	Serjeants, Colour Serjeant included,	0	3	0	3	0	0	0	0
3	Corporals,	0	3	0	3	0	0	0	0
6	Bombardiers,	0	6	0	6	0	0	0	0
2	Drummers, or Bugles,	0	2	0	2	0	0	0	0
80	Gunners,	0	80	0	80	0	0	0	0
100	Total Artillery,	6	14	80	100				
ROYAL ARTILLERY DRIVERS.									
1	Lieutenant,	0	0	0	0	1	0	0	0
1	Staff Serjeant,	0	0	0	0	0	1	0	0
2	Serjeants,	0	0	0	0	0	2	0	0
4	Corporals,	0	0	0	0	4	0	0	0
1	Bugle or Trumpeter,	0	0	0	0	1	0	0	0
1	Farrier,	0	0	0	0	0	1	0	0
3	Shoeing Smiths,...	0	0	0	0	0	3	0	0
1	Carriage Smith,...	0	0	0	0	1	0	0	0
1	Colour makers,...	0	0	0	0	0	2	0	0
2	Whealers,	0	0	0	0	0	2	0	0
73	Drivers,	0	0	0	0	0	0	0	0
91	Total R. A. Drivers.	6	14	80	100	1	8	960	78
Spare Horses, one in ten,									
0		0	0	0	0	0	0	13	13
Establishment,									
614		614	80	100	1	8	973	91	117

TABLE No. 9.
Establishment of a Heavy 3-Pounder Field Battery.

FOREIGN SERVICE.										HOME SERVICE.									
<p>Each Heavy 3-Pr. having one Wagon carries 316 Rounds per Gun. 12-Pr. Howitzer ditto 128 Rounds per Howitzer. One Howitzer wagon addl. 92</p> <p style="text-align: center;">Total, 316 per Gun, 220 per Howitzer.</p>										<p>Each Heavy 3-Pr. with Wagon 316 per Gun. 12-Pr. Howitzer, do. 128 per Howt. No additional Wagons.</p>									
<p style="text-align: center;">ON FOREIGN SERVICE.</p> <p>A Heavy 3 Pr. Field Battery has one Gun Ammunition Wagon less than a Light 6-Pr. Battery; that is, 3 Drivers and 6 Horses less.</p>										<p style="text-align: center;">ROYAL ARTILLERY HORSES AND MULES.</p>									
<p>Numbers.</p>										<p>Numbers.</p>									
<p>R. Artillery.</p>										<p>Rt. Artillery.</p>									
<p>Officers.</p>										<p>Officers.</p>									
<p>N. C. Officers and Drummers.</p>										<p>N. C. Officers and Drummers.</p>									
<p>Grunners.</p>										<p>Grunners.</p>									
<p>Total.</p>										<p>Total.</p>									
<p>Officers.</p>										<p>Officers.</p>									
<p>N. C. Officers and Trumpeters.</p>										<p>N. C. Officers and Trumpeters.</p>									
<p>Artificers.</p>										<p>Artificers.</p>									
<p>Drivers.</p>										<p>Drivers.</p>									
<p>Total.</p>										<p>Total.</p>									
<p>Draft.</p>										<p>Draft.</p>									
<p>Riding.</p>										<p>Riding.</p>									
<p>Baggage.</p>										<p>Baggage.</p>									
<p>Total.</p>										<p>Total.</p>									
<p>Establishment.</p>										<p>Establishment.</p>									
<p>188 Men.</p>										<p>636 Men.</p>									

TABLE No. 10.

Light 3-Pounder (4 feet) Field Battery, travelling single Draft, for Colonial Service.

Each Light 3 Pr. with two carts carries 150 Rounds per Gun.
 4½ Coehorn Howitzer with Do. . . 80 Rounds. .

Number.		R. Artillery.				R. A. Drivers.				Horses and Mules.			
		Officers.	N. C. Officers and Drummer.	Gunner.	Total.	Officers.	N. C. Officers and Trumpeter.	Artificers.	Drivers.	Total.	Draft.	Riding.	Baggage.
	ORDNANCE, &c.												
3	Light 3 Pounders,	0	0	0	0	0	0	0	3	3	6	0	0
1	Coehorn Howitzer.	0	0	0	0	0	0	0	1	1	2	0	0
6	Light 3-Pr. Carts,	0	0	0	0	0	0	0	6	6	12	0	0
2	Coehorn Howitzer Carts, ..	0	0	0	0	0	0	0	2	2	4	0	0
12	Total Carriages												
	ROYAL ARTILLERY.												
1	Lieutenant,	1	0	0	1								
4	Non-Commissioned Officers,	0	4	0	4								
20	Gunners,	0	0	20	20								
25	Total Artillery,	1	4	20	25								
	R. ARTILLERY DRIVERS.												
1	Corporal,	0	0	0	0	0	1	0	0	1	0	0	0
1	Shoeing Smith,	0	0	0	0	0	0	1	0	1	0	0	0
14	Drivers,	0	0	0	0	0	0	0	0	0	0	0	0
	Spare,	0	0	0	0	0	0	2	2	2	0	0	0
16	Establishment,	1	4	20	25	0	1	1	14	16	26	0	0

Note. If the service is likely to be of duration, the officers in that case to be supplied with a riding horse, &c. &c. as is regulated for those with other batteries.

TABLE No. 11.

One Pounder (Amuzette) Battery, Gun 5 feet long, single Draft, for Colonial Service.

Each long 1 Pounder with one cart carries 165 Rounds.
Cochorn Howitzer with two carts, 80 Rounds.

Number.		Royal Artillery.				Royal Artillery Drivers.				Horses and Mules.			
		Officers.	N. C. Officers and Drummers.	Gunners.	Total.	Officers.	N. C. Officers and Trumpeters.	Artificers.	Drivers.	Total.	Draft.	Riding.	Baggage.
	ORDNANCE, &c.												
3	Long 1 Pounders, ..	0	0	0	0	0	0	0	3	3	6	0	6
1	Cochorn 4 ¹ / ₂ Howitzer, ..	0	0	0	0	0	0	0	1	1	2	0	2
3	Light 1 Pounder carts, ..	0	0	0	0	0	0	0	3	3	6	0	6
2	Cochorn Howitzer carts, ..	0	0	0	0	0	0	0	2	2	4	0	4
9	Total Carriages.												
	ROYAL ARTILLERY.												
1	Lieutenant,	1	0	0	1								
4	Non-Commissioned Officers,...	0	4	0	4								
20	Gunners,	0	0	20	20								
25	Total Artillery,	1	4	20	25								
	R. ARTILLERY DRIVERS.												
1	Corporal,	0	0	0	0	0	1	0	0	1	0	0	0
1	Shoeing Smith,	0	0	0	0	0	0	1	0	1	0	0	0
11	Drivers,	0	0	0	0	0	0	0	0	0	0	0	0
	Spare,	0	0	0	0	0	0	2	2	2	0	0	2
13	Total Establishment.	1	4	20	25	0	1	1	11	13	20	0	20

Note. If the service is likely to be of duration, the officer in that case to be supplied with a horse, &c. &c. as is regulated for those with other services.

TABLE No. 12.

Light 3-Pounder Battery, Gun 3 feet long, 2½ Cwt. On Mules' back for Mountain Service.

		Two Mules per Gun, carrying 60 Rounds. Three do. per Howitzer, do. 24 do.				120 Rounds per Gun. 72 Rounds per Howitzer.								
Numbers.		Royal Artillery.				Royal Artillery Drivers.				Horses and Mules.				
		Officers.	N. C. Officers.	Gunnery.	Total.	Officers.	N. C. Officers.	Artificers.	Drivers.	Total.	Pack or Draft.	Riding.	Baggage.	Total.
ORDNANCE, &c.														
3	3-Pounders Mountain, ..	0	0	0	0	0	0	3	3	6	0	0	0	6
1	Coehorn 4½ Howitzer, do. ..	0	0	0	0	0	0	1	1	2	0	0	0	2
	2 Mules per Gun, and 3 do. per Howitzer, to carry Ammunition, }	0	0	0	0	0	0	5	5	9	0	0	0	9
1	For a Forge for Mule Carriage	0	0	0	0	0	0	1	1	2	0	0	0	2
	For Stores, ..	0	0	0	0	0	0	1	1	2	0	0	0	2
	For Tents, ..	0	0	0	0	0	0	1	1	1	0	0	0	1
	For Driver's kits, ..	0	0	0	0	0	0	1	1	2	0	0	0	2
5	Carriages,													
ROYAL ARTILLERY.														
1	Lieutenant, ..	1	0	0	1	0	0	1	1	0	1	1	2	0
5	Non Commissioned Officers, ..	0	5	0	5	0	0	0	0	0	0	0	0	0
25	Gunnery, ..	0	0	25	25	0	0	0	0	0	0	0	0	0
31	Total Artillery, ..	1	5	25	31									
R. ARTILLERY DRIVERS.														
2	Non-Commissioned Officers, ..	0	0	0	0	2	0	0	2	0	0	0	0	0
1	Shoeing Smith, ..	0	0	0	0	0	1	0	1	0	0	0	0	0
20	Drivers, ..	0	0	0	0	0	0	0	0	0	0	0	0	0
	Spare, ..	0	0	0	0	0	0	6	6	6	0	0	0	6
23	Total R. A. D. Establishment, ..	1	5	25	31	2	1	20	23	30	1	1	1	32

TABLE No. 13.

Light 3-Pounder Battery, Gun 3 feet 2½ Cwt. single Draft, with two Mules, Mountain Service.

The Gun and Howitzer Mules, each carrying two boxes, 48 Rds. per Gun 24 per H.
Two Mules per Gun, each 60 Rounds, in two boxes, 120
Three do. per Howitzer, each 24 Rounds, do. .. 0 .. 72

Total carried, .. 168 per Gun. 96 per H.

Number.		Royal Artillery.				Royal Artillery Drivers.				Horses and Mules.					
		Officers.	N. C. Officers.	Gunnery.	Total.	Officers.	N. C. Officers.	Artificers.	Drivers.	Total.	Pack or Draft.	Riding.	Baggage.	Total.	
ORDNANCE.															
3	3-Pounders, Mountain, ..	0	0	0	0	0	0	3	3	6	0	0	0	6	
1	Cochorn 4½ Howitzer, ..	0	0	0	0	0	0	1	1	2	0	0	0	2	
	2 Mules with each Gun, ..	0	0	0	0	0	0	5	5	9	0	0	0	9	
	3 do. per Howitzer, with Ammunition, }	0	0	0	0	0	0	5	5	9	0	0	0	9	
1	Forge for Mule Carriage, ..	0	0	0	0	0	0	1	1	2	0	0	0	2	
	For Stores, ..	0	0	0	0	0	0	1	1	2	0	0	0	2	
	For Tents, ..	0	0	0	0	0	0	1	1	1	0	0	0	1	
	For Driver's kits, ..	0	0	0	0	0	0	1	1	2	0	0	0	2	
5	Carriages.														
ROYAL ARTILLERY.															
1	Lieutenant, ..	1	0	0	1	0	0	1	1	0	1	1	1	2	
5	Non-Commissioned Officers, ..	0	5	0	5	0	0	0	0	0	0	0	0	0	
21	Gunnery, ..	0	0	21	21	0	0	0	0	0	0	0	0	0	
27		1	5	21	27										
R. ARTILLERY DRIVERS.															
2	Non-Commissioned Officers, ..	0	0	0	0	2	0	0	2	0	0	0	0	0	
1	Shoeing Smith, ..	0	0	0	0	0	1	0	1	0	0	0	0	0	
19	Drivers, ..	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Spare, ..	0	0	0	0	0	0	5	5	5	0	0	0	5	
22	Total R. A. D. Establishment, ..	1	5	21	27	2	1	19	22	29	1	1	1	13	

TABLE No. 14.

Establishment of a Med. 12-Pounder Horse Artillery Battery.

FOREIGN SERVICE.													HOME SERVICE.													
Each 12-Pounder having one Waggon, carries 98 Rounds per Gun. 24-Pounder Howitzer, do 84 Rounds per Howitzer. Five 12-Pounders & one 24 pr. Howitzer Waggon addl. 80 60 Total, 178 per G. 144 per Howitzer.													Each 12-Pr. with one Waggon, 98 Rounds Pr. Gun. 24-Pr. Howitzer do. 84 Pr. Howitzer. No additional Waggon.													
Number.	Royal Horse Artillery.					R. H. A. Drivers.			Horses and Mules					Rl Horse Artillery.					R. H. A. Drivers.			Horses and Mules.				
	Officers.	Non-Commis- sioned Officers.	Guns.	Artificers and Trumpeters.	Non-Commis- sioned Officers.	Drivers.	Total Men.	Draft.	Riding.	Huggage.	Total.	Number.	Officers.	Non-Comm. Officers.	Gunner.	Artificers and Trumpeters.	Non-Commnd.	Drivers.	Total Men.	Draft.	Riding.	Huggage.	Total.			
5	0	0	0	0	0	20	20	40	0	0	40	5	0	0	0	0	0	0	15	15	30	0	30			
1	0	0	0	0	0	4	4	8	0	0	8	1	0	0	0	0	0	3	3	3	0	6				
5	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	10	10	0	0	20				
5	0	0	0	0	0	36	36	72	0	0	72	1	0	0	0	0	0	2	2	24	0	4				
1	0	0	0	0	0	3	3	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0				
1	0	0	0	0	0	3	3	6	0	0	6	1	0	0	0	0	0	2	2	4	0	4				
1	0	0	0	0	0	6	6	12	0	0	12	0	0	0	0	0	0	2	2	4	0	4				
2	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0				
1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0				
1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0				
23	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	2	2	4	4	0	4				
ORDNANCE.																										
5	Med. 12 Pounders,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	24-Pounder Howitzer,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	12-Pounder Ammunition Waggon,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	do. do. additional,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	24-Pounder Howitzer Waggon,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	do. do. additional,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	12-Pounder Spare Gun Carriage,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	Forge Waggon,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	Store Waggon,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	Store Cart,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	Camp Equipage Waggon,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	Total Carriages.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Each 12-Pounder having one Wagon, carries 98 Rounds per Gun.
 21-Pounder Howitzer, do 84 Rounds per Howitzer.
 Five 12-Pounders & one 24 pr. Howitzer Wagon add. 80 60
 No additional Wagon.

ROYAL HORSE ARTILLERY.									
2	Captains,	..	2	0	0	0	0	0	0
3	Subalterns,	..	3	0	0	0	0	0	0
1	Surgeon (1 Medic. Horse.)	..	1	0	0	0	0	0	0
2	Staff Sergeants, ..	..	2	0	0	0	0	0	0
3	Sergeants,	..	0	3	0	0	0	0	3
3	Corporals,	..	0	3	0	0	0	0	3
8	Bombardiers, ..	..	0	8	0	0	0	0	6
1	Trumpeter, ..	..	0	0	0	1	0	0	1
6	Gunners, ..	..	0	0	96	0	0	0	48
1	Farrier, ..	..	0	0	0	1	0	0	1
1	Carriage Smith, ..	..	0	0	1	0	0	0	1
5	Shoeing Smiths,	..	0	0	5	0	3	0	2
2	Collar Makers,	..	0	0	2	0	0	0	0
2	Wheelers,	..	0	0	2	0	0	0	0
R. HORSE ARTILLERY DRIVERS.									
1	Serjeant,	..	0	0	1	0	1	0	1
4	Corporals,	..	0	0	4	0	4	0	2
93	Drivers,	..	0	0	0	0	0	0	0
Total men.			6	16	96	12	5	79	214
Spare.			0	0	0	0	14	14	14
Total.			6	16	96	12	5	79	228
Establishment,			0	16	96	12	5	93	228

ROYAL HORSE ARTILLERY.									
2	Captains,	..	..	2	0	0	0	0	0
3	Subalterns,	..	..	3	0	0	0	0	0
1	Surgeon (1 Medice. Horse,)	..	..	1	0	0	0	0	0
2	Staff Sergeants,	..	..	0	2	0	0	0	0
3	Sergeants,	..	..	0	0	0	0	0	0
3	Corporals,	..	..	0	3	0	0	0	0
7	Bombardiers,	..	..	0	0	0	0	0	0
1	Trumpeter,	..	..	0	0	0	0	0	0
90	Gunners,	..	..	0	0	0	0	0	0
1	Farrier,	..	..	0	0	0	0	0	0
1	Carrriage Smith,	..	..	0	0	0	0	0	0
4	Shoeing Smiths,	..	..	0	0	0	0	0	0
2	Collar makers,	..	..	0	0	0	0	0	0
2	Whealers,	..	..	0	0	0	0	0	0
R. H. ARTILLERY DRIVERS.									
1	Serjeant,	..	..	0	0	0	0	0	0
4	Corporals,	..	..	0	0	0	0	0	0
80	Drivers,	..	..	0	0	0	0	0	0
207 Total Men, Spare,				6	15	90	11	5	67
Total.				6	15	90	11	5	67
Establishment...				6	15	90	11	5	60

ROYAL ARTILLERY.									
2	Captains,	..	..	..	..	..	..	..	0
3	Subalterns,	..	..	..	..	..	..	..	0
1	Surgeon, (1 Medic. Horse.)	..	..	..	..	..	..	..	0
2	Staff Sergeants,	..	..	..	..	..	..	..	2
3	Sergeants,	..	..	..	..	..	..	..	3
3	Corporals,	..	..	..	..	..	..	..	3
6	Bombardiers,	..	..	..	..	..	..	..	6
1	Trumpeter,	..	..	..	..	..	..	..	1
80	Gunners,	..	..	..	..	..	..	..	36
1	Farrier,	..	..	..	..	..	..	..	1
1	Carriage Smith,	..	..	..	..	..	..	..	0
3	Shoeing Smiths,	..	..	..	..	..	..	..	0
2	Colour makers,	..	..	..	..	..	..	..	0
1	Wheeler,	..	..	..	..	..	..	..	0
R. H. ARTILLERY DRIVERS.									
1	Sergeant,	..	..	..	..	..	..	..	1
3	Corporals,	..	..	..	..	..	..	..	3
69	Drivers,	..	..	..	..	..	..	..	00
82	Total Men.	61480	9	4	58	171	104	58	8169
82	Spare,	0	0	0	11	11	11	6	17
Establishment,									
125		61480	9	4	69	182	115	164	7186

TABLE No. 17.
Establishment of a Heavy 3-Pounder Horse Artillery Battery.

FOREIGN SERVICE.												HOME SERVICE.													
Numbers.	ORDNANCE, &c.	R. H. Artillery						R. H. A. Drivers.		R. H. A. Drivers.				R. H. A. Drivers.				Horses and Mules.							
		Officers.		N. C. Officers.		Artificers and Trumpeters.		Drivers.	Total Men.	Draft.	Riding.	Baggage.	Total.	Officers.	N. C. Officers.	Gunnery.	Artificers and Trumpeters.	N. C. Officers.	Drivers.	Total Men.	Draft.	Riding.	Baggage.	Total.	
5	Heavy 3 Pounders,	0	0	0	0	0	0	15	15	30	0	0	30	5	0	0	0	0	0	10	20	0	0	0	20
1	12-Pounder Howitzer,	0	0	0	0	0	0	3	3	6	0	0	6	1	0	0	0	0	0	2	2	4	0	0	4
5	Heavy 3-Pr. Ammunition Waggon,	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	10	10	20	0	0	20
1	12-Pr. Hrz. Ammunition Waggon,	0	0	0	0	0	0	21	21	42	0	0	42	1	0	0	0	0	0	2	2	4	0	0	4
1	do. additional,	0	0	0	0	0	0	3	3	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
1	Heavy 3-Pr. Spare Gun Carriage,	0	0	0	0	0	0	3	3	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
1	Forge Waggon,	0	0	0	0	0	0	3	3	6	0	0	6	1	0	0	0	0	0	2	2	4	0	0	4
1	Store Waggon,	0	0	0	0	0	0	3	3	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
1	Camp Equipment Waggon,	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2	4	0	0	4
1	Store Cart,	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
17														14											
		Total, 316 per Gun, 220 per Howitzer.								Horses and Mules.															
Each Heavy 3-Pr. having one Waggon, carries		316 Rounds per Gun.																				Each Heavy 3-Pr. with one Waggon, 316 per Gun.			
One 12-Pr. Howitzer ditto		128 per Howitzer.																				Howitzer do.			
One Howitzer Waggon addl.		92																							

Each Heavy 3-Pr. having one Waggon, carries 316 Rounds per Gun.
One 12-Pr. Howitzer ditto 128 per Howitzer.
One Howitzer Waggon addl. 92

Each Heavy 3-Pr. with one Waggon, 316 per Gun.
Howitzer do. 128

TABLE No. 18.

Proportion of Ordnance, Carriages, Ammunition, Implements, and Stores, required for a Field Battery of each Nature for Foreign Service.

		18 Pounder Iron.	12 Pounder Medium.	9 Pounder.	6 Pounder Heavy.	6 Pounder Light.	3 Pounder Heavy.	8 In. Howitzer Iron.	24 P. How. or 5. In. Hv.	12 Pr. Howitzer.	Total Ordnance.	Amun. Lr Waggon.	Forage Waggon.	Spare Carriages.	Store Waggon.	Store Cart.	Platform Waggon.	Total Ordnance and Waggon.
Ordnance,	18 Pr. Iron, ..	3	0	0	0	0	0	1	0	0	4	1	1	1	2	1	1	23
Carriages	12 Pr. Med. ..	0	5	0	0	0	0	0	1	0	6	1	1	1	2	1	0	23
for a Field	9 Pr.	0	0	5	0	0	0	0	1	0	6	1	1	1	1	1	0	19
Battery of	6 Pr. Hy.	0	0	0	5	0	0	0	1	0	6	1	1	1	1	1	0	18
each na-	6 Pr. Light, ..	0	0	0	0	5	0	0	0	1	6	1	1	1	1	1	0	18
ture.	3 Pr. Hy.	0	0	0	0	0	5	0	0	1	6	1	1	1	1	1	0	17

Disposal of the Ammunition Waggon.

18 Pr. Battery,	{ 18 Pounder, 3 Wgns. 9 } 8 Inch Hrz. 1 do. 4 }	13 Wgns.	{ Rounds per Gun, 162 do. per Howitzer, 112 }
12 Pr. M. Bry.	{ 12 Pr. Med. 5 do. 10 } 24 Pr. Hrz. 1 do. 2 }	12 do.	{ do. per Gun, 178 do. per Howitzer, 144 }
9 Pr. Battery,	{ 9 Pr. 5 do. 7 } 21 Pr. Hrz. 1 do. 2 }	9 do.	{ do. per Gun, 163 do. per Howitzer, 144 }
6 Pr. Hy. Bry.	{ 6 Pr. Heavy, 5 do. 6 } 24 Pr. Hrz. 1 do. 2 }	8 do.	{ do. per Gun, 230 do. per Howitzer, 144 }
6 Pr. Lt. Bry.	{ 6 Pr. Light, 5 do. 6 } 12 Pr. Hrz. 1 do. 2 }	8 do.	{ do. per Gun, 220 do. per Howitzer, 220 }
3 Pr. Hy. Bry.	{ 3 Pr. Heavy, 5 do. 5 } 12 Pr. Hrz. 1 do. 2 }	7 do.	{ do. per Gun, 316 do. per Howitzer, 220 }

TABLE No. 19. *continued.*

		Ordnance.							Waggons.								
		18 Iron.	12 Medium.	9 Pounder.	6 Heavy.	6 Light.	3 Heavy.	8 Inch Iron Hwr.	24 Pr Howitzer.	12 Howitzer.	Ammun. Limbers.	Forge.	Spare Carriages.	Store.	Store Carts.	Platforms.	
Wadmilt's Whole Waggon.																	
Harness and Im- plements belong- ing there- to.	Horse harness { Wheel,	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Single Rope, { Leader,	8	6	6	6	4	4	6	6	4	4	4	4	4	0	4	
	Whips Short, ..	5	4	4	4	3	3	4	4	3	3	3	3	3	1	3	
	Leggins do. ..	5	4	4	4	3	3	4	4	3	3	3	3	3	1	3	
	Head Stall Halters {	10	8	8	8	6	6	8	8	6	6	6	6	6	2	6	
	with Chain Reins, }																
	Nose Bags, Canvas, ..	10	8	8	8	6	6	8	8	6	6	6	6	6	2	6	
	Corn Bags for 2 days																
	Corn, ..	5	4	4	4	3	3	4	4	3	3	3	3	3	3	1	3
	Forage Cords, Setts, ..	5	4	4	4	3	3	4	4	3	3	3	3	3	3	1	3
Reaping Hooks, ..	5	4	4	4	3	3	4	4	3	3	3	3	3	3	1	3	
Water Buckets, leather,	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gun Locks, with propor- tion of Flints, ..		1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	

*Stores carried with each of the Waggon accompanying
a Field Battery of each Nature.*

		18 Pound Iron.	12 Pr. Med. or Light.	9 Pr. or 6 Pr. Hy.	6 Pound Light.	3 Pound Heavy.	8 Inch Howitzer.	24 Pr. or 3 $\frac{1}{2}$ Inch. Howitzer.	12 Pr. Howitzer.
On each Am- munition Lim- ber Waggon,	Limber Waggon for Ammunition,	..	1	1	1	1	1	1	1
	{ Picket Rope 3 Inch— yards,	..	25	25	25	25	25	25	25
	{ Wood Mauls,	..	2	2	2	2	2	2	2
	{ Picket Posts,	..	4	4	4	4	4	4	4
	{ Pieces of 2 Inch rope, each 5 yards,	..	2	2	2	2	2	2	2
	{ Horse Shoes, Setts, with 3 Setts of nails to each, ..	..	40	40	40	40	40	40	40
<hr/>									
With the Forge Wag- gon.	Forge Waggon for each Field Battery,	..	1	1	1	1	1		
	{ Bellows, pair,	..	1	1	1	1	1		
	{ Anvil with Block,	..	1	1	1	1	1		
	{ Coals, Bushels,	..	2	2	2	2	2		
	{ Smiths' Tools in the Limber Box,	..	0	0	0	0	0		
	{ consisting of, ..	..	2	2	2	2	2		
	{ Tongs, pairs, ..	..	2	2	2	2	2		
	{ Slice,	..	1	1	1	1	1		
	{ Ladle,	..	1	1	1	1	1		
	{ Vices,	..	1	1	1	1	1		
	{ Standing,	..	1	1	1	1	1		
	{ Hand,	..	1	1	1	1	1		
	{ Sledge,	..	1	1	1	1	1		
	{ Hand,	..	1	1	1	1	1		
	{ Reacting,	..	1	1	1	1	1		
	{ Rod,	..	2	2	2	2	2		
	{ Hand,	..	2	2	2	2	2		
	{ Rod,	..	2	2	2	2	2		
	{ Hand,	..	2	2	2	2	2		
	Screw Drivers,	..	1	1	1	1	1		
	{ Half round,	..	6	6	6	6	6		
	{ Round,	..	6	6	6	6	6		
	{ Flat,	..	6	6	6	6	6		
	{ Three square,	..	6	6	6	6	6		
	Shoeing Tools, one sett for each smith, ..	..	1	1	1	1	1		

Smiths' Tool
chests not
required.

Stores continued.

			18 Pound Iron.	12 Pr. Hv. or Light.	9 Pr. or 6 Pr. Heavy.	6 Pound Light.	3 Pound Heavy.
Spare Gun Carriage and Wheel Carriage,			..	1	1	1	1
With the spare Gun and Wheel Carriage,	Wheel,	{ Heavy,	..	1	1	0	0
		{ Limber,	..	1	0	0	0
		{ Light,	..	3	2	2	3
	Iron Axles,	{ Whole-Heavy,	..	1	1	1	0
		{ Arms Light,	..	2	2	2	2
	Handspikes,	{ Common,	..	16	0	0	0
		{ Traversing,	..	2	2	2	2
	Shafts,	Complete,	..	2	2	2	2
	Pintails,		..	1	1	0	0
	Limber Hooks,		..	1	1	1	1
	Driving Bolts,		..	1	1	1	1
	Perches,		..	1	1	1	1
	Nose Plates,		..	1	1	1	1
	Trail Plate Eyes,		..	1	1	1	1
	Elevating Screws,		..	1	1	1	1
	Staples for side Arms,		..	0	20	20	20
	Linch Pins,	{ Heavy,	..	4	6	6	0
		{ Light,	..	10	10	8	8
	Wheelers' Tools in the Limber Box, consisting of .. ..		..	0	0	0	0
	Pincers,	Pairs,	..	1	1	1	1
	Broad Axes,		..	1	1	1	1
	Adzes,		..	1	1	1	1
	Draw Shaves,		..	1	1	1	1
	Spoke Shaves,		..	2	2	2	2
	Hammers,	{ Shoeing,	..	1	1	1	1
		{ Rivetting,	..	1	1	1	1
		{ Claw,	..	1	1	1	1
	Drive-Pins,		..	2	2	2	2
	Hand Punches,		..	2	2	2	2
	Cold Chizzles,	Hand,	..	2	2	2	2
		{ 1 Inch,	..	2	2	2	2
		{ 1/2 do.	..	2	2	2	2
		{ 1/4 do.	..	1	1	1	1
	Augers,	{ 1/2 do.	..	1	1	1	1
		{ 1/4 do.	..	1	1	1	1
		{ 1/2 do.	..	1	1	1	1
		{ 1/4 do.	..	1	1	1	1
	Spike Bitts of Sorts,		..	4	4	4	4
	Gimblets,	Nests,	..	1	1	1	1
	Planes,	{ Jack,	..	1	1	1	1
		{ Smoothing,	..	1	1	1	1
	Wrench Hammers,	Strong,	..	1	1	1	1
	Saws,	{ Hand,	..	1	1	1	1
		{ Tennon,	..	1	1	1	1
	Iron Crows,	2 feet,	..	1	1	1	1
	Saw Files,	{ Hand,	..	6	6	6	6
		{ Tennon,	..	6	6	6	6
	Rules,	2 feet,	..	1	1	1	1
	Gauges,	{ Picking,	..	1	1	1	1
		{ Boxing,	..	1	1	1	1

Wheelers' Tool chest not required.

Stores continued.

				18 Pound Iron.	12 Pr. Med. Light.	9 Pr. or 6 Pr. Heavy.	6 Pound Light.	3 Pound Heavy.	
With the spare Gun and Wheel Carriage,	Screw Drivers,	Strong,	..	1	1	1	1	1	
	Linch Pins,		..	12	12	12	12	12	
	Compasses,	Pairs,	..	1	1	1	1	1	
	Rag Stones,		..	1	1	1	1	1	
	Oil Stones,		..	1	1	1	1	1	
	Tool Bags,		..	1	1	1	1	1	
	Chalk Lines,		..	1	1	1	1	1	
	Brass Reels,		..	1	1	1	1	1	
	Socket Chizzles,	2 Inch,	..	1	1	1	1	1	
		1½ do.	..	1	1	1	1	1	
		1 do.	..	1	1	1	1	1	
		¾ do.	..	1	1	1	1	1	
		½ do.	..	1	1	1	1	1	
	Gin complete with Blocks, Sling, and Fall,			1	0	0	0	0	
Store Limber	Waggon,		..	1	1	1	1	1	
	Tarred Rope,	3 Inch, Yards,	..	25	25	25	25	25	
	Lashing Rope,	Coils,	..	1	1	25	25	25	Yards.
	Grease,	Kcgs,	..	8	8	8	8	8	
		Flat,	..	1	1	1	1	1	
	Iron,	Square,	..	1	1	1	1	1	
		Rod,	..	1	1	1	1	1	
		Round,	..	1	1	1	1	1	
		Hooping,	..	1	1	1	1	1	
	Steel,	Sheer,	..	1	1	1	1	1	
		Blister,	..	1	1	1	1	1	
	H. Shoes, Setts,	3 Nails to each,	..	40	40	40	40	40	
	Lanthorns,	Dark,	..	3	3	3	3	3	
	Candles,	lbs.	..	12	12	12	12	12	
With the Store Waggon	Spare,	Leather Buckets,	..	6	6	6	6	6	{ 10 the No. of Horses.
		Nose Bags,	..	6	6	6	6	6	
		Forage Cords, Setts	..	6	6	6	6	6	
	Reaping Hooks,			6	6	6	6	6	
	Scythes,		..	6	6	6	6	6	
	Rag Stones, for Scythes,		..	6	6	6	6	6	
	Spare Gun	Heavy,	..	0	1	1	0	0	{ 1 to each Scythe.
		Light,	..	1	0	0	1	1	
	Wheels,	Fellies of sorts,	..	12	9	9	9	9	
		Spokes,	..	24	18	18	18	18	
		Splinter Bars,	..	1	1	1	1	1	
	Streak of sorts,		..	9	6	6	6	6	
	Copper Powder Measures,		..	2	1	1	1	1	
	Setts, 4 lbs. to ½ lb.		..	2	1	1	1	1	
	Steel Yard, with Weights to weigh 2 cwt.			2	1	1	1	1	{ For weighing Forage, Provisions, &c.
	Collar Makers' Materials,								
	Hides,	Black, Heavy	..	1	1	1	1	1	
		White, Light	..	1	1	1	1	1	

			18 Pounder Iron.	12 Pr. Med. Light.	9 Pr. or 6 Pr. Heavy.	6 Pounder Light.	3 Pounder Heavy.
With the Store Wag- gon,	Bazels, doz.	{ Black, .. 3	3	3	3	2	2
		{ Brown, .. 3	3	3	3	2	2
	Wax, lbs.	{ Black, .. 4	4	4	4	4	4
		{ Bees, .. 2	2	2	2	2	2
	Thread,	{ Collar, .. 6	6	6	6	4	4
		{ Hemp, .. 10	10	10	10	8	8
	Bristles, oz.	.. 8	8	8	8	6	6
	Whip Cord, lbs.	.. 2	2	2	2	2	2
	Whips, .. 6	6	6	6	6	6	6
	Doe's Hair, lbs.	.. 28	28	28	28	28	28
	Serge, yards, .. 20	20	20	20	20	20	20
	Girth Webb, yards, .. 20	20	20	20	20	20	20
	Brushes, Hard, .. 12	12	12	12	12	12	12
	Oil, Gallons, { Sweet, .. 4	4	4	4	4	4	4
		{ Neat, .. 10	10	10	10	8	8
	Straps for side Arms, .. 0	0	6	6	6	6	6
		{ 2 Inch, .. 2	2	2	2	2	2
		{ 1½ do. .. 3	3	3	3	3	3
	Black Iron Buckles, { 1½ do. .. 3	3	3	3	3	3	3
		{ 1 do. .. 3	3	3	3	3	3
		{ ¾ do. .. 3	3	3	3	3	3
	Screws of Sorts, doz. .. 8	8	8	8	8	8	8
		{ Streaks of sorts, .. 100	100	100	100	100	100
		{ 40 Penny, .. 200	0	0	0	0	0
	Nails, { Clasp, { 30 .. 300	0	0	0	0	0	0
		{ 20 .. 300	300	300	300	300	300
		{ 10 .. 600	600	600	600	600	600
		{ 6 .. 600	600	600	600	600	600
		{ 6 Penny, .. 600	600	600	600	600	600
	Nails, { Clout, the large .. 600	600	600	600	600	600	600
		{ sort, chizzle .. 600	600	600	600	600	600
		{ pointed, { 3 .. 600	600	600	600	600	600
		{ 2 .. 600	600	600	600	600	600
	Sack of sorts, 1500	1000	1000	1000	1000	100	100
	Collar Maker's Tools in the Limber Box, consisting of 1	1	1	1	1	1	1
	Lead for punching small, 1	1	1	1	1	1	1
	Saddlers' Hammers, 1	1	1	1	1	1	1
	Knives, { Hand, .. 1	1	1	1	1	1	1
		{ Cutting, .. 1	1	1	1	1	1
	Mallets, 1	1	1	1	1	1	1
	Shears, 1	1	1	1	1	1	1
	Clams, 1	1	1	1	1	1	1
	Ragstones, 1	1	1	1	1	1	1
	Rules, 2 feet .. 1	1	1	1	1	1	1
	Marline Spike, 1	1	1	1	1	1	1
	Hand Iron, 1	1	1	1	1	1	1
	Needles, { Collar, .. 6	6	6	6	6	6	6
		{ Sewing, .. 24	24	24	24	24	24
		{ Large, .. 1	1	1	1	1	1
	Awls, { Driving, { Small, .. 1	1	1	1	1	1	1
		{ Stitching, of sorts, .. 12	12	12	12	12	12
	Punches, 1	1	1	1	1	1	1
	Pincers, Pairs .. 1	1	1	1	1	1	1
	Nippers, Pairs .. 1	1	1	1	1	1	1
	Stuffing Sticks, 2	2	2	2	2	2	2

Proportion of Ammunition and Laboratory Stores carried with a Field Battery of each Nature.

With each Gun and Limber.										With each Ammunition Wagon.									
18 Pounder.	12 Pounder.	9 Pounder.	6 Pounder.	6 Pounder Light.	3 Pounder Heavy.	8 Inch Howitzer.	24 Pr. Howitzer.	12 Pr. Howitzer.		18 Pounder.	12 Pounder.	9 Pounder.	6 Pounder Heavy.	6 Pounder Light.	3 Pounder Heavy.	8 Inch Howitzer.	24 Pr. Howitzer.	12 Pr. Howitzer.	
..
Shot, {	Case, {
Shells. Common, empty,
Carcasses, Round, fixed,
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Ammunition and Laboratory Stores, continued.

	With each Gun and Limber.								With each Ammunition Wagon.									
	18 Pounder.	12 Pounder.	9 Pounder.	6 Pounder Heavy.	6 Pounder Light.	3 Pounder Heavy.	8 Inch Howitzer.	24 Pr. Howitzer.	12 Pr. Howitzer.	18 Pounder.	12 Pounder.	9 Pounder.	6 Pounder Heavy.	6 Pounder Light.	3 Pounder Heavy.	8 Inch Howitzer.	24 Pr. Howitzer.	12 Pr. Howitzer.
Rasps, half round,	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Box rides, ..	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pincers, Iron, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Compasses, Pairs, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Quadrant and } each,	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Perpendicular, }	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Cork Screws, ..	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Tin Funnels, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Scrapers for Shells, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Slow Match Skains, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Liat Stocks, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Powder Horns, ..	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TABLE, No. 20.

Further Proportion of General Stores for six Months' Consumption of a Field Battery already equipped.

		Field Battery.		
		18 Pounder.	Heavy.	Light.
Gin complete with Blocks, Sling, and Fall,	..	1	0	0
Claw Hammers,	..	2	2	2
Intrenching Tools.	{ Felling Axes,	..	3	3
	{ Pick Axes,	..	3	3
	{ Hand Bills,	..	3	3
	{ Spades,	..	6	6
Tarred Rope, 2 Inch Coil,	..	1	1	1
Ratline, or Lashing Rope Coils,	..	1	1	1
Spun yarn, Coils,	..	1	1	1
Grease, Kegs,	..	20	16	16
Horse Harness, Rope, {	Wheel.	..	2	2
	Leader,	..	8	4
Riding Saddles and Bridles each spare,	..	2	2	2
Whips, Short,	..	5	3	3
Leggins, ditto,	..	5	3	3
Head Stall Halters, with Chain Reins,	..	10	6	6
Iron Hames, Spare,	..	4	3	2
Spare,	{ Nose Bags, Canvas,	..	0	0
	{ Corn Bags for 2 days corn,	..	0	0
	{ Corn Sacks,	..	0	0
	{ Forage Cord Setts,	..	0	0
Spikes, Springs, and common, each,	..	2	2	2
Priming Irons, Setts,	..	2	2	2
Park Pickets,	..	60	50	44
Wood Mauls,	..	6	6	6
Lanterns,	{ Muscovy,	..	4	2
	{ Dark,	..	4	2
Candles,	..	36	36	36
Slow Match, cwt.	..	1	1	1
Tarpaulins for covering Ammunition,	..	1	1	1
Leather Buckets,	..	50	50	50
Wadmill Tilts,	..	1	1	1
Hair Cloths,	..	1	1	1
Copper Scales with Beams,	..	1	1	1
Brass Weights, 4 lbs. Pile,	..	1	1	1
For the Smiths.	{ Steel, cwt.	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ ditto,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Sheer,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Blister,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Plate, $1\frac{1}{2}$ Inch,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Square,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Iron, cwt.	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Rod,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Round both,	..	$\frac{1}{2}$	$\frac{1}{2}$
	{ Hooping,	..	$\frac{1}{2}$	$\frac{1}{2}$

General Stores for six Months' Consumption, continued.

			Field Battery.					
			18 Pounder.	Heavy.	Light.			
For the Smiths.	{	Coals, Chaldrons, ..	4	4	4	{ At 6 Setts of Shoes pr. Horse. Detail see Forge, Field Battery.		
		Horse Shoes, Setts, 3 Setts of } ..	0	0	0			
		Nails each, ..	1	1	1			
		Shoeing Tools, Spare Setts, ..	1	1	1			
For the Wheeler.	{	Smiths' Tools in a Box, Spare Setts for each Shoeing Smith, } ..	1	1	1			
		Spare Wheels, {	Gun, { Heavy, ..	0	0	0	{ According to practice of the Carriage Department.	
			Light, ..	0	0	0		
			Limber, ..	0	0	0		
For ditto.	{	Waggon, { Fore, ..	0	0	0			
		Hind, ..	0	0	0			
		Iron Axles, ..	0	0	0			
		Shafts complete, ..	0	0	0			
For ditto.	{	In the rough, {	Fellies, ..	0	0	0		
			Spokes, ..	0	0	0		
			Splinterbars, ..	0	0	0		
			Shafts, ..	0	0	0		
For ditto.	{	In the rough, {	Guides, { Fore, ..	0	0	0		
			Hind, ..	0	0	0		
			Under Poles, ..	0	0	0		
			Perches, ..	0	0	0		
For ditto.	{	Hand Spikes, {	Common, short, ..	20	0	0		
			Traversing, ..	0	6	6		
			Iron Crows, ..	4	0	0		
			Screws of Sorts, ..	50	25	25		
For ditto.	{	Clasp, {	Streaks, ..	2000	2000	2000	{ Detail see Wheel car. Field Battery.	
			40 Penny, ..	500	0	0		
			30 ..	500	0	0		
			20 ..	1000	1000	1000		
			10 ..	3000	2000	1000		
			6 ..	2000	2000	1000		
			6 Penny, ..	2000	2000	2000		
			Clout, the largest size chiz- zle pointed, {	4 ..	2000	2000		2000
			3 ..	2000	2000	2000		
			2 ..	2000	2000	2000		
Wheelers' Tools in a Box, spare sett,	{	Tacks of Sorts, ..	5000	4000	3000			
			1	1	1			
For the Collar Maker.	{	Hides, {	Black, { Heavy, ..	3	3	3	{ Detail see Wheel car. Field Battery.	
			Light, ..	3	3	3		
		doz. {	White, Horse, ..	3	3	3		
			Black, ..	9	9	6		
		Bazles, lbs. {	Brown, ..	9	9	6		
			Black, ..	6	6	6		
		Wax, ..	Bees, ..	6	6	6		
				24	24	18		
		Bristles, oz. {	Collar, ..	18	18	12		
			Hemp, ..	30	30	24		
Threads, lbs. {	White Brown, ..	2	2	2				
		6	6	6				
Whip cord, lbs. {								

At 6 Setts
of Shoes
pr. Horse.
Detail see
Forge,
Field Bat-
tery.

Accord-
ing to
practice
of the
Carriage
Depart-
ment.

Detail see
Wheel car.
Field Bat-
tery.

General Stores for six Months' Consumption, continued.

			Field Battery.		
			18 Pounder.	Heavy.	Light.
For the Collar Maker.	Does Hair, cwt.	..	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
	Serge, yards,	..	60	60	60
	Brushes, setts, { Hard,	..	36	36	36
	{ Soft,	..			
	{ Water,	..			
	Oil, gallons, { Sweet,	..	1	1	1
	{ Neat,	..	30	30	30
	{ Lintseed,	..	6	6	6
	Turpentine, gallons,	..	1	1	1
	Paint, Lead colour, cwt.	..	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
	Paint Brushes, large and small, each,	..	6	6	6
	Straps for Side Arms,	..	18	18	18
For the Collar Maker.	Block Iron { 2 Inch,	..	6	6	6
	{ $1\frac{1}{2}$,	..	9	9	9
	Buckles of { $1\frac{1}{2}$,	..	9	9	9
	Sorts, doz. { 1,	..	9	9	9
	{ $\frac{1}{2}$,	..	9	9	9
Camp Equipage, in the proportion as heretofore,			0	0	0
For the Collar Maker. } Collar Makers' Tools in a Box, spare sett,			1	1	1
Blankets,			0	0	0
Canteens,			0	0	0
Haversacks,			0	0	0

{ Enough to paint once a year.

{ To be issued when demanded.

{ Detail see Store Waggon, Field Battery. One for each man, military and civil, issued when taking the field. One fourth spare in reserve, also a blanket for each horse.

The following was a proportion of farriers' medicines formed by Veterinary Surgeon O'Connor, by order of Major General Howorth, on the Peninsula service, as sufficient to accompany a brigade of 120 horses in the field for two months. Similar proportions were placed in boxes with the several depôts, from whence the demands made by the brigades monthly were supplied.

Physic,	lbs. 1	
Diuretic Balls,	.. 2	The box containing these was kept in the store waggon, whence a smaller proportion was issued to the farrier, and kept in a small box in the limber of the forge waggon.
Fever Balls,	.. 1	
Blistering Ointment,	.. 2	
Wound Ointment,	.. 2	
Blue Vitriol,	.. 2	
Alum,	.. 8	
Nitre,	.. 1	
Sugar of Lead,	.. 1	
Common Salt,	.. 4	
Tow,	.. 4	
Cloth for Bandages,	.. 0	
Paper for Balls,	.. 0	

The proportion for 180 horses $1\frac{1}{2}$ the foregoing would meet the wants of a 9 or 12 pounder field battery, or a box properly filled with canisters, &c. for the above proportion placed in the store waggon and smaller box, fitted in like manner for a half proportion carried with the farrier on the forge limber box, would be more convenient.



N. B. It is to be observed, that there may be in the foregoing detail of field equipments some trifling omission of spare articles, as the chief object has been to form a general principle of equipment. And where even the nature of the articles are defined, the proportion and quantity of spare and general stores must be regulated according to the localities of operations.

[To be continued in our next.]



ARTICLE II.

SUASSO'S INFANTRY MOVEMENTS.



In the last Number of our Repository, we promised to notice "Suasso's Theory of the Infantry Movements."

The body of this work would appear to have been written long before the publication of the "Field Exercise and Evolutions," as revised by Sir Henry Torrens. Although, therefore, some of its remarks and principles may not immediately bear on the mode of performance lately promulgated to the army, yet all the alterations authorized by that publication have been duly remarked upon in the notes.

The author introduces his work by a valuable Preface, from which we proceed to submit some extracts to our readers.

Noticing that the adoption of the term Strategy, to distinguish the movements of an army out of the view of an enemy, from those of Tactics, which occur within sight, has gone far to prevent celerity, which is the chief principle in the former, from being unwisely obtruded on the latter; and having considered Tactics, as divided into the high, and the elementary, the first including the general movements of an army in all the several species of field engagements; and the second, or elementary tactics, comprizing the evolutions incident to the several branches of an army, including the engineers, artillery, cavalry, infantry, and light troops, our author observes:—

"Of those several branches, only the two relating to gunnery and fortification are properly cultivated: the rules on which they rest have been most carefully investigated, and the principles suggested by reasoning, confirmed by experience, embodied into a science, are submitted to the reflection of the individual whose duty reposes on an acquaintance with them, and are by him diligently studied; so that none without the knowledge of those rules can pretend to the appellation of an artillery officer or an engineer: nay, though the unaccountable variety which attends the effect of the fire-arms seems to reject all regularity, and to baffle all endeavour at principle, the difficulty, if not entirely obviated, has been much removed by the medium average, which

carefully ascertained, by being equally distant from the two extremes, secures against considerable deviations, and thus, in a great measure, protects the science against the dangerous uncertainty of chance. It is not, therefore, by walking round a rampart, by taking a view of a half-moon, or by going through the few evolutions which are performed in the management of ordnance, that the engineer or artillery officer conceives his information is to be acquired; but it is by a constant application to theoretical principles, that directs his conduct and leads him to further researches, that he qualifies himself for his duty; it is by blending the dexterity of practice with the certainty of science, that he renders himself adequate to the task he is called upon to perform in defence of his king and country; and were he to fail, conscious of having done his utmost, free from the reproach of neglect, he soars above misfortune, for his honour remains unimpeached.

“ But how very different to this is it in the infantry, in which corps, on appointment, the young man, after he has been taught a few grips of the firelock, is admitted in the ranks, to go mechanically through a few evolutions; and, besides this, without any further investigation, confines his knowledge to the few loose thoughts delivered in the mess by those who, though older in the service, from being educated like himself, are not better acquainted with the tactics of the foot, and to the purchase of the *Rules and Regulations* (now *Field Exercise and Evolutions*); a valuable book he seldom or never reads, and which, were he to attempt to peruse, he could, from his complete want of information, not properly understand, and still less appreciate; yet the young man advances a years, rises in rank, and, with his scanty stock, is called to the command of the regiment, and there compelled to instruct others in what he has neglected himself to become acquainted with. Incompetent to judge, still less fit to determine upon military topics, he harours doubts, acts with indecision, and the lives of thousands are sacrificed through ignorance, to the offspring of idleness.

“ The picture is strong, but not exaggerated—the colours are adapted to the representation; the softer pencil might please better, but must purchase applause at the dear expense of truth. Still, here I cannot conclude, for the matter is too weighty to be easily slidden over, and not to claim the full benefit of discussion. It is time, indeed, to reclaim the foot from an error that has taken so deep a root as to bid defiance to the force of argument, and which yet while it sways, will ever debar the infantry from the attainment of that degree of knowledge of which it is susceptible. I allude to the idle doctrine, that tactics cannot be taught, as well as to the convenient maxim, that theoretical information is of no use, and may be supplied always by practice, which alone can make the soldier.

“ But what practice is here meant? is it the practice in the field, or is it the practice on the parade? Is it the knowledge of the chief comman-

der and his immediate subordinate generals, or that of the individuals in charge of brigades, regiments, or companies, which is here to be understood? for those objects, widely different in themselves, are, on this occasion, industriously enough blended together to entangle a position which, without the confusion that must result from such an arrangement, is not capable to stand the test of disquisition. But let us not engage on such unfavourable ground, which, merely chosen to protract, would never put an end to the contest; but, by separating what is unlike, and classing the whole under a proper division, by divesting each part of its heterogeneous matter, oppose to each its proper arms, and, by the mere weight of reason, destroy the faint defence that sophistry has vainly erected to screen and protect deficiency from the victorious power of science.

“ Let us proceed to consider what is meant by practice. Is it the few manœuvres which are daily or occasionally rehearsed on the parade, most frequently with very little reference to service, and where the officers are made to change their pivots according to the orders of the day? or, to be more precise, according to the directions contained in the existing Regulations. This may give them an insight into the manœuvres which are to be employed, and, as far as it regards the individuals posted on the flanks of the platoons, and entrusted with their care, give them a habit of keeping distance, and of covering,—both important considerations; but beyond these nothing can be expected from it. Yet, if it be the field which is designed by it, the application is still more unhappy; for what opportunity of instruction does it offer to an officer? He marches, he is on guard, he fights in a cloud of smoke; but, unless he be on the staff, he sees but little of the transactions of the day; and had he time to notice, and an innate talent to appreciate what occurs within his observation, his conclusions would, in all probability, still remain erroneous from his premises being only partial. Besides, how often are the same occurrences repeated. Do they take place twice in a campaign, nay, even twice in the several campaigns that constitute a war? Still repetition is an essential condition of knowledge derived from experience. But admitting even the possibility that, after two or three campaigns, an officer has acquired a certain stock of information, what is the stock so obtained otherwise than theory? Is not theory, in military matters, the rules deduced from experience? and from whose experience? from those of the most celebrated characters; for it is not given to all men to see with the discretion here requisite, and still less to discover, without the frequent aid of the teacher, the latent causes that produce the consequences observed. The stream which runs to the right does not always spring from the left, and its windings must be known in order to trace the original source it flows from. Is not theory the practice of ages, whilst practice is the theory of individuals? and can it reasonably be supposed

that a single person, whatever experience he may possess, and sagacity he may be endowed with, will equal the aggregate knowledge of ages, and of mankind? Yet to the defence of so absurd a position is the opponent of theory driven to; and still the ridiculous doctrine, sanctioned almost by prescription, derives support from those, who by their exalted rank and length of service give weight to opinion, but who, from their having neglected in their younger years to search into the secrets of their art, are all their lives condemned to a torpid ignorance, and perhaps not anxious to see their inferiors in a few months acquire a degree of knowledge, which, surpassing the narrow circle of their own, would enable them to detect their want of capacity, and establish a difference, which, contracted as they are in their ideas, they are most interested to suppress, so as to confine all distinctions within that established more favourably for them by rank. For was once the voice of talent heard and listened to, and admitted to share its part among the military considerations for advancement, the additional epaulet, or even the *eguiette*, derived from age alone, would make a poor amends for the want of science. Unable to stand the competition, it would recoil with disgrace on its possessor; and while those honourable distinctions would stimulate the young, and adorn as well as recompence the diligent and studious soldier, whose abilities have kept pace with his uniform, they would become the badges of shame and infamy to those officers, who, from the want of capacity, do not come up to them. Like the ass, when clad in the lion's skin, their consequence must cease with detection, for once known they fall beneath contempt.

“Were it, however, allowed that a practice derived from service fully supplies the want of theory, as this still requires time, what must be expected from the first campaigns, and where opposed to an adversary differently situated in this particular? Will not the ascendancy he takes at first onset almost fix, and perhaps altogether decide the contest? And were it to be alleged that, as this can merely apply to the subalterns, the danger expressed is not reasonably to be apprehended from the number of experienced officers still filling the ranks, as a pacific reign, a long discontinuance of hostility must obviously include the whole of an army within the novitiate, the objection is not removed. But here we have an instance that asserts the excellence of theory, and sets aside all speculations on this head; for, as General Scharnhorst observes*, when the war of 1740 broke out between the Austrians and the Prussians, this question was put to the test, and the result was most obvious in behalf of efficacy in the former; for a pe-

* Scharnhorst, *Handbuch für Officiere*, preface, vol. i. No man saw more service than Marshal Puysegur; yet see, in his *Art of War*, Part I. chap. ii. how little he thinks of practice without theory.

rusal of those campaigns will soon evince how knowledge in the Prussians supplied their deficiency in experience, which was altogether on the side of the Austrians.

“Were the proposition now, instead of referring to the inferior officers, as it has done hitherto, to take a higher flight, and bear on the chief commander of an army, the result of the enquiry will be equally satisfactory; for if it be allowed (which must be admitted), that the general character, as well as the particular features that constitute the operations of a campaign, as well as the disposition of an engagement, cannot be contracted within the narrow boundaries of certain fixed rules; there are still principles to be kept within sight, and which, though occasionally to be departed from, it would ever be dangerous to allow to escape recollection; since the case itself which constitutes anomaly implies a knowledge of the precept, to discriminate the time where it may be neglected, as well as how far it may be safe to do so, without exposure to the dangers which the rule is designed to guard against; nor can a diligent acquaintance with history be prudently slighted. Innumerable are the instances to be produced, where a deficiency in the knowledge of former facts has led to most fatal repetitions of error, and which, if known or recollected, might have saved the destruction of armies, nay, of empires;—how often are the same mistakes committed, the same stratagems successfully employed! A battle in Italy was gained by Suwaroff on the spot already illustrated by the victory of Hannibal; and while he resorted to the same expedient of the Punic warrior, the French general was betrayed into the very mistake which occasioned the discomfiture of the Roman consul. The Marshal Contades repeated at Minden the error Tallard had committed at Blenheim (Hochstad), and almost half the misfortunes that have befallen commanders may be traced back to the fatal system of division. How frequent are the instances of innumerable armies, which have been worsted and annihilated by much inferior forces, from being successively and partially defeated!

“It is remarked by a general officer*, that some peculiar and uncommon features in tactics generally secure the series of brilliant successes which attend eminent military characters. This remark, if true, will account for their early triumphs, and less rapid progress in the more advanced part of their career; a circumstance which almost uniformly accompanies the lives of all the great captains, and which, by the bye, is not very favourable to the sentiment of advantage acquired by practice; for, if it were so, as their ideas would continually expand by experience, they would grow more formidable as they grew older, and every succeeding campaign would present more splendid achievements than the preceding. Yet we do not observe the progression

* *Considerations sur l'Art de la Guerre, par le Baron Roanet, note 17.*

keep pace with maturity; and, far from indulging the flattering prospect, we see the laurels gathered in youth submitting to the painful tribute of nature, and tarnished with age. Prince Maurice of Nassau, Spinola, Hannibal, Mark Anthony, Charles the Fifth, Charles the Twelfth, as well as Buonaparte, are amongst other conspicuous illustrations that might be adduced in behalf of the sentiment expressed; and if less unsuccessful than those enumerated, we may still retrace the fatal stroke of time in the latter campaigns of Prince Eugene*, as well as the great Frederick; and notwithstanding that victory constantly attended the triumphant chariot of Marlborough, the goddess in the latter part was evidently more sparing of her gifts. How trifling must appear the bloody battle of Malplaquet, when compared with the splendid days of Blenheim and Ramilies!—how widely different are the insignificant results that followed the first-named, with the immense conquests that attended the two last mentioned! and was not the first march of that great man, from the Low Countries to Bavaria, and his junction with Prince Eugene, which saved Germany, the most splendid deed of arms of the British warrior? With the rapidity of lightning he moves his columns, overturns all that attempts to obtrude his passage, and, like the thunderbolt that changes the atmosphere, his union with Eugene altered the state of the war, and turned the scales that were already leaning to France. It was then that Europe witnessed with amazement two heroes, who, forgetting all private considerations to pursue the public good, and who, fearless of decreasing their reputation by dividing the glory that attended their skilful combinations, enhanced their fame by an example of concord which stands unparalleled in the annals of the world. But in descanting with pleasure on an event so flattering to the feelings of humanity, I have suspended the narrative, and left the subject of discussion, to which it is time to return. What experience had the Prince of Condé, when, at the age of 22 years, he gained the battle of Rocroy? As to Spinola, he had none, when he took the command of the troops in the Netherlands†. Frederick the Second had never been in the field, when he led the Prussians through the victorious campaign of 1741; and if Buonaparte had served in an inferior capacity before he assumed the chief direction of the army of Italy, where he performed such deeds as nearly fixed for 20 years the destiny of Europe, his services were trifling, and confined, I believe, to the siege of Toulon. As to Moreau, he was quite a novice to the active part of the profession; but he had three years of incessant study to

* Prince Eugene, after his defeat at Denain, and the unsuccessful campaign that followed it, was fortunate against the Turks. But he seemed to have lost much of his vigour in 1733, where, opposed to the French, he allowed Philippsburgh to be taken in sight of the Austrian army. It was said at the time, that the Imperialists were no longer commanded by the Prince, but by his shadow, "*L'ombre d'Eugene.*"

† Major Donkin's *Military Collections*.

guide his conduct: and although the Duke of Wellington had been employed in India, and by his amazing victories had foretold his country what it had a right to expect, the European warfare was new to him, when the guns in the Park announced the brilliant contest of Vimiera, as well as the unexpected expedition to Oporto; which latter, had his orders been truly followed up, would even then, and at so early a period of the war, have compelled a whole French division to surrender*; a division commanded by whom? by Soult, a marshal whose military reputation stands unimpeached.

"How it comes to pass that inefficiency in professional knowledge, a notion so incapable of standing the test of reason, so discountenanced by experience, and the falsehood of which may be retraced in almost every page of the historian, has been grafted on the profession, and has grown to such a magnitude as to shade ignorance from the reproach to which, without this factitious shelter of prejudice, it must stand exposed, must seem inexplicable, were it not satisfactorily accounted for in the restriction to the twofold means of seniority and friendship, that alone lead to preferment; and in the obligation of theoretical acquaintance not being insisted on, as few will be prompted to industry, where it is not enforced as immediately necessary, and where, not being essential to their advancement, it will much interfere with their pleasures.

"That where a science is in so great disrepute, little will be thought of the productions which attempt to elucidate it, and still less so of those persons who waste their time in the undertaking, are consequences too natural to excite surprise. It is observed by Count Guibert†, that the Chevalier De Folard never rose higher than a colonel, and that as such he was even never employed in the field; still, in the unsuccessful campaigns of the Spanish Succession War, when the French monarchy was shaken by the victories of Eugene and Marlborough, his counsels were called for. But was Count Guibert himself more fortunate?—

* Nothing, perhaps, displays so much the military skill of the Duke of Wellington, as the attack upon Oporto, which had the pass of Ruivães, near Salamonde, been occupied in time, would have compelled Marshal Soult and his whole division to lay down their arms, and to surrender themselves prisoners; a fact which is partly admitted by Count Naylies, (*Memoires sur la Guerre d'Espagne*, livre ii.) and clearly observed, from the great difficulty the Marshal experienced, in extricating his troops from the critical position in which he had placed them. As this was manifestly owing to the French commander's undervaluing the superior talent of the British general to whom he was now opposed, it evidently shews how superior the Duke was in military affairs to those who had preceded him in the command of the Peninsula. The Count Naylies was an officer under Soult, and consequently an eye-witness; his testimony is, therefore, particularly satisfactory. Besides this attack of Oporto, what the author relates respecting the retreat of General Moore, the general insurrection which took place in Galicia, after the departure of the British troops, and the precarious situation in which he describes the French armies to have been in that province, after the British had embarked, are all circumstances well deserving the attention of the reflecting reader.

† Guibert's *Défense du Systeme de Guerre*, Part I. chap. i.

His early works, which elevated him to the rank of a colonel, awakened, with his promotion, the hatred of envy; and this judicious writer and most worthy man, while he was solicited by his king to redress the errors which had crept into the military system; while he was sacrificing his time and his repose, to employ the great talents he was endowed with in the service of his country, was slandered by most malicious reports, that were industriously spread to raise a general clamour against him. The chief compiler of the *French Regiment*, still in use, a work, therefore, that remained stationary both under a revolution, whose fundamental principle was to leave nothing unaltered, as well as under the military sway of a warrior, whose will was law, and by whom no great defect could have been overlooked, no great improvement he neglected, he, the Count Guibert, was represented as the enemy of France*. Marshal Puysegur delayed the publication of his military compositions till after his death; and I blush to have to add, that his son, in presenting them to the public, explains his father's motives of delay by his apprehension of professional disadvantages; nor was Marshal Feuquieres ever employed, after his sentiments, since published in his *Memoirs*, were known; and thereby, to gratify the hatred of a few individuals, France was deprived of an officer of considerable merit, the best partisan of the kingdom, at the very time it was the most in want of able men, and when the daily messengers were filling the palace of Versailles with the mournful tales of fresh disasters.

"Still how much the military treatises promoted the advancement of the art of war, and how much they assisted to develop the chaos in which it was left after the destruction of the Roman empire, and in which it remained for centuries, till the skilful hand hurried the tardy progress of time, is apparent. A perusal of the life and the works of the great Frederick will clearly evince the benefit he derived from the lessons of Folard and the Marshal Saxe. How far he owed to the first, and to Vegetius the suggestion of the oblique order, the chief ornament of his tactics, and to which he was indebted for his most brilliant victories, I leave to the impartial reader to determine. Those writers, it is true, merely produced the raw materials, and it required the masterly hand of the great monarch to weave the pride of the art; but their original merit cannot be refused, and the great share they lay a claim to cannot be disputed without injustice. Has not every department, that constitutes an army, derived information from the pen of Tempelhoff? And if his details of provisions, and the accumulation of embarrassments he presents as concomitant to the removal of the troops, though just, and most ably drawn up, have sometimes led to caution beyond the mark of necessity, and thereby, by fettering the hands of the commander, betrayed into feeble measures, the principles are still true,

* Vol. v. of his *Œuvres Militaires*. (See latter part of his *Subdivision Générale du Code*, what he says, and the letter of M. Leveneur to him.)

and no blame can be imputed to him for their having been misunderstood ; while he described the transactions of the Seven Years' War, he laid the foundation of the high tactics ; and if the fabric was left unfinished, the work was still much advanced ; no part of the science was left untouched or unimproved. Nay, may not the early reading of Lloyd have considerably contributed to the first successes of Buonaparte ? At least, may it not have given a cast to the thoughts of that skilful commander, the development of which produced the general features that distinguish his operations ? and are not the precise delineations of Frederick's strategy and tactics, his comparison with those of Buonaparte, the peculiar character that belongs to the latter ; the fatal consequences that attend the division of forces, (an error so frequently repeated, and always so fatal in its results,) are not all these, and many others that I could produce, gifts we in gratitude owe to the Baron de Jomini ? But let us, as the bees, in sucking the flower, merely confine ourselves to what may produce the honey and the wax ; for if we are not on our guard against indiscriminately adding to the useful what is not so, and which may even turn dangerous, no trifling punishment awaits our indiscretion. I cannot help ascribing, in a great measure, to Colonel Bulow the dreadful consequences that followed the battle of Jena ; and to the publication of his book, much read at the time, but now entirely forgotten, the fatal mistake which betrayed his countrymen into the error of an eccentric retreat, the results of which are too well known to be dwelt upon*. But this remark, far from enfeebling, enhances the importance of study ; for if it be true, that the promulgation of military precepts becomes beneficial or dangerous as they rest on truth, or are derived from an erroneous conception, and that they become of such consequence as to occasion the pre-eminence or downfall of states, their contemplation cannot be without solicitude. The microscopical glass must be applied to discern with a cautious eye the pure part that may add to the treasure from the false grain that might corrupt it ; and can a matter whose influence is so momentous, and which requires so great a scrutiny, ever fall within the neglect of indifference ?

The author subsequently notices " a circumstance, which has particularly operated to depreciate the use and merit of military works."

" It is the numberless productions with which the publick was burthened, in illustration of the Nineteen Manceuvres ; and which as soon as the *Rules and Regulations* of 1792 had been promulgated, and the

* The eccentric retreat of the Prussians, after the Battle of Jena, was not improbably owing to the work of Bulow, in which this mode of withdrawing a superior force is strongly urged as preferable. This error Bulow took from Lloyd, in whose work this mistaken theory respecting retreats is equally recommended.

selected movements to be performed at a review known, were produced for several years in a rapidity of succession of which the most important and exalted subject can hardly boast. Yet, as the whole of the instructions contained in those books related merely to the position of the captains, subalterns, &c. down to the drummers, and was designed to apprise them only when they were to move to the right, or to the left; to turn about, or to take a pace to the front; and the puerile detail was delivered without any further information, and without any reference to the principles of the science, knowledge dwindled into a contemptible mechanism, and a trifling part was mistaken for the whole. Those compositions, truly calculated to cramp the mind of the young soldier, were evidently of a nature to give a false drift to his studies, and to waste the time of the diligent, who, deceived by the false boundaries, was condemned to walk continually over the same path: similiar to those Chinese geographers, who, in drawing the earth as a square, had filled the centre with their empire, and left but an insignificant part of the four corners to represent the rest of the world, he looked upon himself as a most consummate master, when, in reality, he was involved in the grossest ignorance. Nor was the evil here easily remedied, as the mistaken sentiment was so general, so rivetted, and had so effectually superseded all endeavours at theoretical skill, that no production of a different kind, as far as I am aware, was at the time presented. In such a state of degradation, it can excite no wonder to hear the idle remarks, not always undesignedly advanced, but still more frequently unguardedly repeated, that no advantage can be derived from the perusal of military works; that nothing is necessary beyond the *Regulations*; and, finally, that nothing new can be produced in military matters*.

But let us carefully examine each of these objections separately; let us give them a fair chance to vindicate the truth of their assertions; but if unable to stand their ground, let them be condemned to oblivion, nor any longer disturb the speculative or laborious, who attempts to ascend the temple of science, by arresting his progress, and directing him to the abyss of error. They are the last ramparts that still screen the idle and the gay; and as such, let us attempt to level them to the ground; for, if once left exposed to publick view, who is the officer, who is the man of honour, who will openly lie under the stigma of professional deficiency?

* When I presented the British Drill to a general of considerable reputation, and whom I highly honor, he observed very civilly to me, that, notwithstanding the merit the work probably possessed, he could not conceive the utility of any book on the subject of discipline beyond the *Regulations*: a perusal of the British Drill will soon convince the reader of the contrary; but such had been the degenerated state of military productions, all merely reverting to the eighteen movements selected for a review, that the suggestion, how singular never it may appear, did not strike me as extraordinary at the time.

As to the first, that no benefit can be derived from the perusal of military treatises, it will be sufficient to read a single work to be convinced of the contrary; and why should the military art be the only one in which an acquaintance with its principles is not profitable? is it because the *Rules* imply habit in their application? But is that peculiar to it? What science reposes alone on established precepts? And do not practice and experience play their part in all of them? In every branch of the medical line, is that information derived from daily repetition less essential than to the soldier, yet does it follow hence, that study is of no avail? Are not the productions that constantly enrich the art of healing, sought after with avidity by its most skilful practitioners? Does the study of the law alone constitute the knowledge of the counsellor, and is a frequency at the bar not indispensable to him;—yet would Blackstone have neglected the examination of the smallest pamphlet, much less the perusal of a book that treated on jurisprudence? But leaving those remote instances, to return within the precincts of our present contemplation, and render the parallel more striking by a more striking analogy; are not the engineers and artillery officers indebted also to the aid obtained from habit, but is their scientific acquaintance therefore slighted; and are the *Rules* of Vauban and Coehorn, as well as the laws that point out the effect of ordnance, not present to their mind, as a safe criterion to which they constantly refer, to guide their experience?

As to the second consideration, that the orders issued by authority must supply all tactical instructions, the thought is so superficial, so distant from what really is the case, that it is truly inconceivable how officers any way acquainted with the military science can hold such language. The *Rules and Regulations*, as well as the foreign *Reglements*, or the present *Field Exercise and Evolutions*, are codes of instructions, a series of general orders relative to an army, to point out the modes of execution for the performance of the movements to be used in it. That an entire acquiescence should be had to what is therein contained, and the spirit of innovation should be most carefully repressed, are premises which no soldier any way impressed with the principles of his art, and with the great importance of unity, will ever feel inclined to question; but were such a work designed to contain all tactical information, and to supersede all other productions of the kind, twenty volumes would scarcely suffice to contain the matter—a convenient treatise, indeed, to carry about. Yet who will attempt to deny that the various branches that constitute the knowledge of the soldier, could well be contracted within a smaller bulk? Those new Omars, with the Koran in one hand and the torch in the other, are willing to destroy the superfluous or dangerous materials; but like the tale itself I am alluding to, it is too ridiculous to enforce belief; and where the inutility of military works is ever expressed, it must be in jest, or har-

hour some latent consideration not willingly avowed : besides, the familiar acquaintance with the structure of a single system will never give proficiency in a science, and the various sentiments delivered, the controversies and arguments, the different topics of discussion produced, must be known, and well known, before a man is capable to discriminate, and select with judgment; nay, erroneous opinions that have suspended decision, and have been ably supported, though they have given way to the sterling weight of truth, and are obliterated, must not entirely be neglected; for their acquaintance will guard against future intrusion, and assist to detect the disguise under which they may still venture to surprise and obtain admission. Where the foundations are not solidly laid, what can be expected from the superstructure? and where knowledge is not the result of principles deduced from reasoning, no stability can be expected, and no position defended, as the lesson of to-day may always be overturned by the story of to-morrow. May not this want of sufficient enquiry account for the indecision that, in many respects, prevails in the European armies, which, as if dependent upon one another, adopt, reject, and readmit the same object almost in unison, to please the fancy of the day: thus the lance, the queen of the cavalry arms, as Montecuculi describes it, was ignominiously dismissed, but has very lately recovered its rank amongst the weapons of the horse*. The firing by ranks, disused on the abolition of the pikes, was re-adopted in the late wars by the Austrians, and received by the French; and may not this want of solid instruction likewise account for those ridiculous trials that disgrace the parade-ground, as preparatory for the second campaign†? And where the fatality of the preceding year, owing to the inability of the general, or deficiency in discipline, is, from national pride and other considerations, ascribed to the system, the poor system must suffer for all. Have we not seen, in the beginning of the revolutionary war, German tactics cried up to the skies, nothing spoken of but German discipline, German steadiness, German precision‡? Yet when, from an inferiority in their chief, those well-trained soldiers were worsted by far inferior troops, but better commanded, and supported by a better directed artillery, their whole system was turned into ridicule; steadiness, compactness, was laughed at; and, as if the destruction of regularity in the infantry

* (Montecuculi's *Memoirs*.) Those lancers, or hulans, the name they formerly went by, were, after a lapse of time, again introduced in France by Marshal Saxe, who had appreciated their merit in Poland. During the late wars, they have been generally received in the principal armies; in Britain, the 9th, 12th, 16th, 17th, and 23d light dragoons, have been successively made lancers.

† Where Guibert speaks of the useless trials made, as a preliminary to secure better success in a second campaign. (*Essai Général de Tactique*, vol. i.—*Infanterie*, chap. iv.)

‡ *Essay on the Military Police and Institutions of the British Empire*, by C. W. Pasley, Colonel of the Royal Engineers, chap. viii.

performance, and a few minutes gained in a tactical movement, could supply the deficiency of a faulty and protracted strategical operation, every hope was entertained from the men that were exercised in a run*. It was at that time the conduct of His Royal Highness the Duke of York was particularly conspicuous. Aware of the impending danger, which was threatening to overwhelm the admirable system, whose introduction he had himself so much promoted, but conscious also of the source from which the evil sprung, he did not venture to stem abruptly the torrent, whose water, though insalubrious, was still palatable, and perhaps not without benefit at the time, under the despondency that was prevailing; and which it would, therefore, have been at least imprudent, if not dangerous, to stop too suddenly. He, consequently, did not interrupt its course; but by the issue of timely instructions, he insensibly recalled the mind to the true principles; and while he willingly lent his influence to obtain His Majesty's command to alter the manual and platoon exercise†, he with a firm hand confirmed the *Rules* promulgated for the movements in which no amelioration was at the time discernible‡. Britain contracted a double debt to her commander in chief; for he preserved the wise combination he had himself

* Unless it be for pre-occupation or rapidity, to form from battalion column into line, or again from line into mass, as either of those two formations become momentarily preferable, there are but very few cases, indeed, which, in tactics, demand a more accelerated pace than the quick step: whenever the latter can be resorted to without immediate danger, it is always preferable. It must be ever remembered, that steadiness in the individuals, and compactness and solidity in the body collected, are the great criteria of the infantry; and that those preeminent qualifications must suffer in proportion as the troops are more rapidly moved. Is it not true again, that it is in proportion as the men are obedient, silent, and kept cool in action, that they can be trusted, and can be considered as soldiers; and that, in proportion as they lose those essential qualifications, by being hurried and over-heated, they degenerate into a mob? This apparent contradiction betwixt the immediate advantage derived from a more regular performance, and the occasional necessity for greater despatch, has not a little perplexed the tacticians of late years, and I fear it has led many into a great error. How far the object of quickness, when of moment, (the only time it is ever admissible,) can be attended to, without infringing on the more orderly execution, will be seen in the following, where the new mode proposed for the exercise will enable the additional rapidity, where requisite, to be obtained without intrusion on discipline, and without unfavourably influencing the individual in his more regular performance, a consideration in itself sufficient to recommend the suggestion, was not the reconciling of the manner of operating on the parade to that in the field a still stronger motive to countenance it.

† *Book of Manual and Platoon Exercise.*

‡ His Royal Highness has since conceived that some alterations in the system were admissible; and having obtained His Majesty's consent, Major General Sir Henry Torrens was entrusted with the important task of improving it. As regulations for the field exercise and evolutions of an army, the work he produced is evidently more concise, better arranged, as well as more explicate than the rules and regulations of 1792. That many of the movements have also been improved, the notes in the course of the work relative to those alterations will fully prove.

principally assisted to establish, and yet was the service not debarred of any innovation that was favourable ; but such a precision demands more than superficial knowledge ; it stamps the master of the art. And what is here obvious in his Royal Highness, is no less so in the Vanquisher of Waterloo. Little dazzled by the prosperity of Buonaparte, while he admired his genius, he detected his mistakes, and avoided them. Impressed with the thought that the destiny of war could not rest on anomalies, but was better secured within the precincts of the science, he brought the strategy and high tactics back to their former boundaries : Sir Arthur Wellesley, by not following blindly the fashionable warfare of Buonaparte, finally eclipsed his most brilliant deed of arms in the still more splendid achievements of the Duke of Wellington.

As to the third objection, that nothing new can be produced ; if by this it is understood, that nothing very different from what is already known, is to be brought forward, some truth belongs to the assertion ; but why this is to militate more against military than any other kind of new productions, is not so readily explained. The series of events that constitutes the annals of England, was known before the pen of the immortal Hume was ever employed to retrace its history. The new treatises on geometry, algebra, and every branch of the mathematics,—the new volumes designed to illustrate architecture, navigation, &c. are chiefly compelled to reproduce what has already been mentioned in those preceding ; yet, as far as I remember, they have never incurred the reproach of repetition : the want of new materials, as far as I know, is never cast as a fault upon them ; and is the variety a work admits of in its arrangement, the different modes of presenting the matter, of no consideration ; is the dissimilar feature it exhibits not alone sufficient to give it a new character ? Does Tempelhoff's Seven Years' War supply the Seven Years' War of Lloyd's or Jomini's ? Do Jomini and Lloyd supply each other, or Tempelhoff ? and do their lessons of strategy and high tactics in any manner supersede the instructions derived from the perusal of the works of the Archduke Charles ? And is not the same applicable to the compositions that treat on the more humble topics of the science ?—But by whom are those objections produced ? By those who never read military works, and to them, of course, their utility must evidently remain questionable. Yet, whenever a thought before unheard-of is started, or fresh manner of performance for a manœuvre is proposed, how absurd soever it may be, how detrimental soever it might prove to uniformity, it is eagerly grasped at, the alluring charm of novelty cannot be resisted. Nor can this appear extraordinary since, indeed happy ought they to be, to meet with any opportunity that can any way tend to enlarge the narrow circle of their information.

In page lxii. of his Preface, our author thus describes his "Theory of the Infantry Movements :"—

"It embraces the whole science of the manœuvres, which manœuvres are, therefore, properly classed and described in it. In addition to the several opinions alleged by the most celebrated writers, the modes of performance of the Austrians, the Russians, the French, the Prussians, the Danes, and the troops of the Netherlands, are, besides the British, presented in further illustration*. Each movement concludes by a brief examination, which itself terminates by a selection, amongst the ways of execution produced, of that or those which present a claim to eligibility; this book, therefore, promises to lead the infantry officer through the various stages of instruction, and to make him thoroughly familiar with the knowledge that appertains to his profession.

"To render the work of more general interest, I have inserted a Treatise on Firing, which, I trust, is as complete as any before offered to the publick; and, finally, concluded by a succinct account of the various actions in which the infantry may be engaged. A useful body of remarks, that, drawn from the highest authorities, will, I hope, be received with pleasure by those officers whose services before the enemy entitle them to deliver an opinion; and which, if so, cannot fail to be of some benefit to the young soldier, whom it will assist in initiating into the mysteries of the field.

"I must allow, that those who seek for new ideas, or unknown evolutions, &c. will generally be disappointed; for little of the kind will be found in it, nor have I ever been anxious to replace that which is already unexceptionable by a less favourable substitute. As my endeavours have been not to entangle the tactics of the foot, but to promote its advancement, I have been throughout bent on presenting what I conceived to be the best, and most carefully avoided to obtrude improvements, where I observed no improvements were to be made. Yet in professing a dislike to innovations, I have, however, never neglected when ultimately selecting the eligible modes of performance to search for meliorations; and where I fancied a new method might lead to advantage, and promote the object, I have never omitted to offer it for trial."

Having concluded his observations upon what refers to instruction, military theory, and military writers, our author reverts to the results derived from discipline.

* As the manœuvres of those different armies are naturally derived from the different sentiments entertained respecting the various modes of performing the movements, their delineation, beside the advantage they present, of exhibiting the different practices in use, are the best specimens to be produced to unfold the different modes of execution to which the evolutions are liable: thus considered, were the whole of those systems to undergo alteration, their delineation, in a theoretical point of view, would not be less useful.

“As discipline cannot make up for the incapability of a commander in chief, the deficiency of his immediate subordinate generals, the want of information in the engineers, the mistakes of an ill-conducted artillery, discipline cannot alone secure victory; but it may promote and lead towards it, by enhancing the value of the infantry and the cavalry, and thus render their exertions more certain: to refuse, therefore, its friendly aid, in some branches of the service, because it cannot apply to all of them; to ruin the foot and horse, or at least to render their effect of less efficacy, because the other parts are already defective, and thereby improve on the chances already favouring the enemy, is a line of conduct that must appear extraordinary, but which I fear is not without example. In the first campaigns of the Revolutionary War, when a want of sufficient reflection, a superficial knowledge of warfare, had led to the belief that precision in performance, derived from steadily instruction, was paramount to success, disappointed and amazed at the unexpected conquest of the French, whose army was described as so inferior to those of their antagonists in this particular, discipline, from being overvalued, was entirely levelled with the dust. But let those campaigns be carefully investigated; let reason silence prejudice and the popular tale of the day; let the soldier read the account of the soldier*, and he will discover the true causes that have led to the unfortunate circumstances; he will no longer attribute to rapidity in the movements of a battalion, to disorderly tactics, advantages that are to be traced back to a superiority only in strategy; he will find the reasons that have led to the discomfiture of the allies in their system of dissemination, and in their never acting in mass; he will read with surprise, and be unable to account for those fatiguing marches from the Sambre to the Lys, where a great part of the forces was rendered useless, and which, if properly directed, would have annihilated both the armies of the republic; but far from impeaching the benefit which excellence in the performance bestows on troops, he will find it most conspicuously bearing its part; he will find it singly, with inferiority in almost every other respect, successfully struggle, and for a protracted period keep the scale on an equipoise*, till at last it sunk under the ac-

* *Jomini Suite du Traité des grandes Opérations militaires*, vol. vi.

† In reading the accounts of the actions which took place during that campaign (1794), it is impossible not to observe the great superiority of the troops of the allies, as derived from their superiority in discipline. At the forcing of the camp of Preux-au bois, before Landrecy, the behaviour of the Dutch was conspicuous. The successive attacks at Pichegru on Haspres, Denain, Wassigny, and on the Duke of York's troops at Villiers en Couchie, were all repulsed. At Trois Ville, the Duke of York defeated the French army under General Chapuis. The attacks that were at the same time made against the Austrian lines, were equally driven back, and the defence of the village of Priches, by the Archduke Charles, reflects the utmost credit on both the Prince and his troops. If, at Turcoing, the allies were defeated, how could it have been otherwise, when, split into small divisions, they were successively overpowered by numbers? yet the troops behaved well throughout, and the Hessian guards displayed the greatest valour in

cumulated weight of strategical considerations ; but then it still afforded the protection of a regular retreat, such as ill-taught troops could have never been able to accomplish. Had the French cavalry and infantry at the time been equal in discipline to those of the allies, or had those of the allies been less trained than they were, and in the state they sunk after a long continuation of the war had thinned their ranks, and replenished them with recruits less carefully instructed ; the results would have been still double to those stupendous events, which, as they

the defence of Lannoy Pichegru was repulsed on the 22d of May ; and had the troops under Clairfayt, and the body under the Archduke Charles joined the forces engaged, he must undoubtedly have been totally defeated. Clairfayt was repulsed at Ypres, which he intended to relieve ; while at Tournay, only a few leagues from it, there were thirty thousand men who remained inactive, while eight or ten thousand British, under the gallant Lord Moira, the present Marquis of Hastings, were left at Ostend, to await the event of a conflict in which they might have gloriously shared. Had those two corps co-operated with him, is it likely that, with such an accession of forces (forty thousand men), the Count Clairfayt would have failed in his attempt ? Would not success have infallibly crowned his enterprise ? But let us now turn to the Sambre ; and there we shall find the French four times passing that river, and four times, after a prodigious slaughter, compelled to recross it. If, the fifth time, they were more fortunate, and gained the day of Fleurus, which decided the fate of the campaign, could a disposition more extraordinary be taken up, than that chosen by the allies ? With an inferior army, they opposed a superior force along its own front ; and as the French were placed in the form of an arch, the allies, in order to encompass them, were obliged to spread over a more extended curve ; yet their insulated attacks were (notwithstanding their great inferiority and their want of union) all successful, with the exception of that commanded by the Prince of Orange, whose column, overpowered by numbers, was obliged to fall back. At four o'clock in the afternoon, the day was dubious ; at last it eventually decided in favour of the Republicans, owing to the directions which the commander in chief gave to the Archduke Charles, Quasdanowich, General Boaulien, and Kaunitz, to quit the field of battle, a step to which he was prompted by hearing that the town of Charleroy had surrendered to the French. Yet at that period two divisions of the Republicans on their right had already withdrawn on the other side of the Sambre ; the left had been driven back, and had likewise partly removed over that river ; and though the resistance and the able movements of General Kleber and General Lefebvre much contributed to the ultimate success of the French, had the column of the Prince of Orange united to that of Quasdanowich, to attack together Gosselies and Jumet, while Kaunitz, Beaulien, and the Archduke Charles, had concentrated to fall together upon Fleurus, the action would have been most favourable to the cause of royalty. It was, therefore, not German tactics, to repeat the expression of General Jomini, that were in fault ! but it was the Germans, as he rightly observes, who had forgotten the art of war of Gustavus, Marlborough, Eugene, Montecuculi, Trawn, Frederick, as well as forgotten the lessons of Cæsar, Vegetius, Puysegur, Folard, and the Great Frederick. But these remarks of the French General allude to the high tactics and the strategicks ; for the inferior branches of the science, those that refer to the particular arms, and movements of the infantry and the cavalry were fully effective. And yet, it is that very campaign in which exactness in the evolutions, and superiority derived from compactness and discipline, were so conspicuous, which is produced in support of a disorderly performance. The most able musicians cannot make up for the defects of the symphony, the merit of which entirely rests on the skill of the composer ; still the piece has been heard when executed by them under its greatest advantage, for an indifferent set of performers would have rendered it still more objectionable.

were inexplicable at the time, will ever excite the wonder of future ages.

"Yet was the conjecture I am speaking of not in itself sufficient for conviction, the sceptick may refer to the Seven Years' War; and there enquire how much Frederick the Great was indebted to the skill of his troops, and the support his operations derived from the manner in which they were executed. The illustration is particularly happy, as the effects produced by this agency visibly declined as the war went on, and his old soldiers were replaced by those not equally well informed; and it became still more obvious after his grenadiers, the flower of his army, had fallen at Torgu; from which period his victories are evidently less*, as well as his operations more cautious, and less decisive.

Fancieism, the spirit of party, may into create the mind, and as well as the more noble sentiment of patriotism, lead men to the despising of life;—but discipline alone can make the soldier. It was the inflexible laws of Sparta that created a Leonidas, and the three hundred followers that fell a sacrifice at Thermopylae; and it was equally the vigorous character of the Prussian discipline that produced a captain, Baron Perch, who, at the head of 900 recruits of Prince Ferdinand's regiment, all, like himself, determined to die or to conquer, with the exception of 65, who were taken prisoners, and a few who, wounded, escaped at Troppan, received that end they were apparently wishing for, an instance which leaves that of antiquity far behind, but which with it, by exhibiting the same results as arising from the same causes, under circumstances almost in every other respect opposite, most conspicuously points out the spring they are derived from, they will guard against the corrupt testimony of the historian, who, to countenance some cherished opinion of his own, is but too often anxious to represent military transactions as independent of discipline, in order to make them appear as derived from principles he is inclined to establish or to propagate. But let the statesman be well impressed with the

* This deterioration in the infantry was already somewhat felt, or, at least, much apprehended by the King of Prussia, as far back as 1758, (see note 8, chap. 1). From this principle of gradual decrease in the value of the infantry and cavalry, during hostility, the great attention to be paid to depots during war will immediately suggest itself; and how far it is important to trust those nurseries of the army to individuals capable of giving instruction, and inclined to bestow their time, and to pay a proper attention to them, must be naturally deduced. Whatever may be alleged to the contrary, an infantry soldier, in order to be properly grounded in his exercise, must be six months at the drill: it is after that period, that, acquainted with the principles of his profession, he more and more acquires that habit of acting with others in the ranks; every week, every day, every hour, then tells to his advantage.

Another attention, which I should likewise recommend, is to attach some veterans to those depots. In the field it is not sufficient for a soldier to know his exercise, he must know how to provide for himself, and his conduct must be frequently influenced by circumstances, for which the lesson of former experience may at least prepare, if not fully complete, the young soldier.

principle, for it is important for him to know, and never to forget, that superiority in the chief commander, a thorough acquaintance with the art of war that pervades in the different branches of an army, and superiority of discipline in the troops, are the surest guarantees of a triumphant warfare. The soldiers of the tyrant, the soldiers of the king, the soldiers of the commonwealth, the soldiers of the cross, as well as the soldiers of the crescent, have all had their day of glory as well as their day of distress, in proportion as those decisive considerations rose or sunk in the scale of comparison. I am fully aware of the various prejudices that will here unite to combat such an opinion; but, new pigmies, they oppose a new Hercules, that armed with the annals of the world will reduce them to silence. Whatever may be the side we espouse, the wish we are actuated by, what advantage can we ever derive from delusion? The most pleasing dream is but a dream after all; and when we awake, the short pleasure enjoyed is dearly bought by the disappointment that follows.

But to attain this object, so far at least as it relates to the discipline of the infantry, the drill must be carefully attended to, and not be left to the discretion of the serjeants; but call in action the immediate vigilance of the officers. The recruits may at first be intrusted to the care of the adjutant; but once formed sufficiently to act in the platoon, and when delivered up to their companies, it is the captain with his subalterns, who is to superintend their instruction. By this it is not meant that the officers are to be constantly employed with their men, and to be daily obliged to exercise them for several hours; far from it, nor is seldom any good produced from so constant an exertion; if the drill be well understood, the proper instruction given, and necessary attention bestowed, an hour twice a week, in which the men are once exercised with arms, and the other day without arms, will be quite competent to complete the purpose. To look for correction when the battalion is assembled, is to display a slight acquaintance, indeed, with military instruction; it is the school for the officers, it is the school for the serjeants; but for the men, it is rather more likely to destroy than to promote their exactness in performance, by the irregular habits they may and will imperceptibly contract, and which, if not incessantly checked in the platoon drill, must rapidly upset all principles, and render a corps daily under arms, daily more unqualified for the execution of its movements. This accounts for those battalions, that, continually harassed, without improving their exercise, find themselves generally equalled, and frequently surpassed by those which are seldom seen under arms*; and as for those slovenly and daily rehearsals where the eighteen or any selected manœuvres are seemingly gone through, but in which, though they may challenge the applause of the common

* The reason of this is plain; the latter, if not sufficiently instructed, are at least less spoiled than those more frequently under arms.

run of spectators, the sharp eye of the soldier regrets to discover that the men do not face properly; that the wheels are performed in a run, and in a curve; that the marching in file is carelessly performed; that the marching in line is more the effect of chance than the result of a careful adherence to rules; and that every individual, unconcerned, no longer guided by the touch of his neighbour's arms, altogether acts by himself; and in short, that that steadiness, solidity, compactness, the true and only strength of the foot, are altogether unknown, neglected, nay, even frequently counteracted, their inutility must be apparent.

As for the want of uniformity which is alleged to attend the instruction by companies, as the orders issued by authority are precise as to the performance of the movements, it seems at least improbable, as it implies deficiency where deficiency is inadmissible; for an officer who would neglect his professional acquirements so far as to be unacquainted with the directions delivered in the *Field Exercise* and *Evolution*s, is evidently unqualified to fill any situation, and much more undeserving of the promotion that must place him at the head of such a drill*.

Previously to dismissing the subject of drill, I shall venture to introduce an observation which relates to the battalion exercise; and which, if admitted to be true, must lead to the conclusion, that great error still prevails in the manner in which it is actually conducted; I allude to that constant restraint put upon the men while under arms, which renders the practice on the parade so unlike to that in the field, and which, from a want of sameness between the two modes of performance, eventually debars the operations on service from the advantage of

proper preparation. To unfold this subject, and explain my meaning, I shall remark, that when under arms, the soldiers are, while manœuvring for instruction, continually kept to the compact position at close ranks and files; hence so soon as they lose this tactical position in action, it is no more recoverable; and how immediately they must give it up in an engagement, where every impediment of ground, every trifling hindrance, constantly operates and intervenes to destroy this regular progress, is apparent: now, how immediately important it becomes thence to reconcile the men to an habit of speedily regaining the regular formation, when accidentally lost, must strike as obvious. Why so momentous an object has been neglected, and has never attract-

* The truth of it is, that officers are glad to get rid of the drill; and therefore allege the plea of want of uniformity, for leaving the formation of the battalion entirely in the hands of the adjutant and serjeant major. If they were aware of the additional trouble this fallacious system of instruction throws on themselves, this and many other considerations would soon induce them to take their share in the drill. Where officers are well acquainted with the regulations, and strictly adhere to the rules therein laid down; where the field officers are gradually trained to perform this most important duty of theirs, no variety, or want of uniformity can ever result from the company drill.

ed more serious regard, seems strange ; nay, so little is the thing itself thought of, that, readily given up, the steady performance is generally viewed as impracticable in action, and consequently conceived beyond the power of discipline. But how little I partake of this sentiment, and how far it is attainable by assimilating the conduct of the battalion, during its exercise, to its conduct in the presence of the enemy, will be seen by what follows.

In contest, while opposed to an adversary, the compact and tactical formation can never be retained beyond five or ten minutes to the utmost, nor can there ever be any necessity for its being protracted beyond the time above specified. Now, this established, as its preservation for so short a period must apparently be divested of great difficulty, the important consideration remains, to provide the means so as to render the troops capable, in the heat of action, and whenever required, to take up instantly this regular form and close array, and to retain it within the confined space of ten minutes, the time described as desirable. What I propose, accordingly, is for the battalion's instruction chiefly to bear on this particular ; so that the men, by being never kept to the stretch of solidity beyond the time to be preserved and desirable in the field, may be rendered most familiar with the transitions from the more regular into the less regular, and the less regular into the more regular positions, which, once made perfectly habitual to them, they will, from the similarity of execution, while struggling with the enemy, with the same facility as at a review, be capable immediately to revert from the loose into the compact, and from the compact into the loose formation ; which latter, in partaking of the ease of the route march, under the rules of which it is to be subjected, would, to recover the former, (the more orderly construction,) merely demand in the men of the front rank to regain the touch of the arm on the dressing flank, and for those of the rear ranks to lock up, and cover their file leaders : now, as what is infeasible is here no longer insisted upon, and nothing but what is immediately essential is required, it is presumed that what is truly useful will be obtained. Nay, as the soldier would then be practised to an execution calculated for active service, and therefore be no longer impressed with a notion of inutility respecting his former instruction, chiefly derived from the dissimilarity which now exists between the two modes of manœuvring, when in presence and out of presence of an enemy, he would, when really engaged, perform mechanically in the field of action as he is accustomed on the field of exercise.

Were this adopted, the drill of the recruit and that of the platoon, without undergoing the slightest alteration, would remain as they are ; but so soon as the companies are brought together, for the performance of the battalion evolutions, the compact and regular formation should never be preserved above five or ten minutes to the utmost, to

give way to the relaxed position of the route march, which latter would then occasionally, and as often as deemed expedient, be again relinquished, for the same space of time, to take up the more regular disposition; the commands *ease* and *formation**, as they are to relieve each other, being delivered by the battalion chief to apprize of the change, and when expressed, obeyed accordingly. It will readily be conceived

* Were the mode of execution here proposed adopted, besides the advantages enumerated, and resulting from drawing the performance on the parade nearer to that in the field, it would facilitate the accelerating of the pace beyond that fixed for the quick movement, (108 in a minute,) whenever advantage belongs to greater celerity, as it removes the great objection now adducible against hurrying the step; namely, the pernicious tendency it has on discipline, by counteracting all habits of compactness in the soldiers, and by reconciling them to a loose, slovenly, and disorderly mode of execution. Since where dispatch becomes momentous, as the relaxed formation might be and ought invariably to be referred to, the apprehension of the additional speed in the pace unfavourably operating on the close position of ranks and files, under which disposition it no longer occurs, is removed. While under the regular formation, the men should of course, never step at a pace beyond the quickest cadence (120 in a minute). The instant the hurried troops are arrived, and the desired ground is occupied, the compact disposition must, of course, be immediately resumed, a transition now rendered perfectly habitual, so that the moment of collision may take place under the orderly formation. Rapidly to occupy a position, and afterwards to defend it in a compact, solid body, are the objects required from the infantry, and to which its instruction should be chiefly directed: I leave the officers to judge whether any method can ever so effectually attain these objects as that suggested. In a pamphlet lately published in France by a retired general officer, (*Considérations Générales sur l'Infanterie Française*), the necessity for rapidity in the infantry evolutions is strongly urged, and the author proposes even to step at the cadence of 152 paces in a minute; yet after dwelling much on the advantages derived from quickness of motion, he observes, "*Je ne prétends pas (page 67) soutenir qu'on doit toujours enfoncer l'ennemi à la course. Je veux seulement qu'elle serve dans plusieurs circonstances aux manœuvres préparatoires de l'action, lors qu'il ne serait reconnu prudent d'y arriver avec plus de lenteur; attendu qu'en courant les rangs ne peuvent être serrés.*" This says every thing, and undoes all he said before. In running as well as in hurrying the march, compactness and unity are lost. And what is an infantry then, but a disorderly mob? By the mode proposed, every benefit is secured, while every evil is avoided; and celerity, where preferable, may advantageously be resorted to without intruding upon discipline. It must, however, be observed, that to render this innovation beneficial, it must emanate from authority, and be incorporated within the regulations of the army. All innovations, if partial, are dangerous to the military establishment, not solely because they are destructive to uniformity (an object itself of importance), but likewise from their leaving the road of alteration open to the individual, whose capacity, not always keeping pace with the rectitude of his intentions, might, from erroneous conceptions and applications, render prejudicial that which, if properly understood, and well directed, would have led to amelioration. It is the duty of those who make a study of the various branches of the military profession to examine what is offered for the improvement of the art, and after a careful inspection to present the result of their inquiries to the higher authorities; but it must rest with government, after weighing the advantages and disadvantages belonging to a proposal, to adopt or reject it; and should the former be the case, after publicly acknowledging the merit of the discovery, to sanction its practice. It must likewise be well understood, that improvements must be considerable to give them a claim to attention; for if trifling, they can never outweigh the disadvantages which must attend continual alterations, and their concomitants, indecision and relaxation.

that those commands are to be given at times unknown, and as frequently as the battalion commander deems it advisable to promote the manœuvre, or to fix on the mind of his men those transitions, the main point here desirable.

“To exemplify this mode of performance by the existing practice at a review: after the general salute and marching past, which are to be executed as usual, the troops should be permitted to gain the loose formation, and thus be made to convert, for instance, into a close column in rear of the right company; hence, after facing, they would thus in file be marched to take post behind the right division that stands fast; but while in progress, or immediately after fronting, be ordered to resume the strict disposition, and under this constraint be made to perform with the utmost steadiness and correctness for five or ten minutes, when the easy construction may again be indulged, to relieve the more exact formation. Grand divisions might then be formed, the column be closed, marched, and deployed, and during those evolutions the strict performance be occasionally resorted to for the short time expressed; but whenever so referred to, the greatest attention should be bestowed to see the utmost precision and compactness prevailing throughout, which, from the very limited duration desired, can meet with no reasonable objection, and must, therefore, be strictly enforced. An attention to be had whenever the line is formed, whether at once or successively, is for the divisions invariably to recover the compact formation before they halt, which the correctness of the dress demands, and for the men to remain under this restraint until the command *eyes-front* be given, which then may be followed by the word *ease*, to resume the more relaxed position. The manner in which any evolution is to take place, on the same principle, will be readily deduced from the preceding, and will consequently need no further elucidation.

“The strict conformity such a mode of operating offers to what recurs, and is obtainable on service, must forcibly plead in behalf of the suggestion. Yet for those persons who are the most tenacious for established customs and permanency of expedients, a perusal of the work itself will obviate any suspicion of a design to overturn the system of the day, and exonerate from any intention of presumptuously replacing, by wild schemes, the lessons that have stood the test of time, and are confirmed by the experience of ages; since far from lightly obtruding my own ideas, it will be discovered, that listening with submission to those who, I am fully aware, are better qualified to determine, I have commonly preferred the adopted measures, and merely diverged from them where I fancied I perceived obvious advantages, or where diversity of opinions, by weakening the practices in use in the different armies, sanctioned the expectation of improvement.”

In his first chapter, Suasso treats on the distance of files, depth of ranks, mode of dividing the infantry,

strength of divisions in a battalion, place occupied by a soldier in the ranks, formation of the Company and Battalion; and describing the French, Dutch, Prussian, Austrian, Danish and Russian formations, closes this chapter with some general observations, from which the following are extracts.

“The advantages arising from the close position of files and ranks, are sufficiently shown in the preceding sections; and as the depth of formation is also fixed in them to three, with the occasional reduction to two where preferable, the next object of enquiry seems to be, the manner in which the men should be distributed and posted in the ranks, and whether the size, or any other consideration, ought to be preferred to guide in this particular. Introducing the subject, therefore, by discussing this object, we will follow it by the remaining topics that equally belong to the formation, including them under three heads: 1st, the proper and most appropriate strength of the battalion; 2d, its more natural and congenial mode of division; 3d, the most eligible situations for the officers and under officers, as the best adapted to the performance of their duties.

“With respect to the posting of the men in the ranks, we have seen by the preceding, that, in the British infantry, the tallest are brought in the front rank, those next in size placed in rear, and the shortest in the centre, a disposition which, by bringing the strongest and most able men in the position where their exertions are likely to prove most efficacious, appears both natural and reasonable. Yet however obvious this appears, doubts have still arisen respecting the propriety of thus placing the foot; and while some, questioning the inference of courage and strength from superiority in height, have expressed a wish that those not apparently, but effectually, so favoured by nature, should be advanced to the front: others have surmised that, acting as a vehicle of distinction, this post of honour should be reserved to the older and most deserving soldiers; whilst others again, admitting size to be the safest standard on the occasion, are of opinion, that the posting of the shortest in the front, and the tallest in the rear rank, appears consonant to reason. Among those favouring the last assertion, we find general Von Ehwald, who, in his treatise on light troops*, in describing the American army, under Washington, as thus drawn up, the tallest in rear, seems not only to favour this formation, as best calculated

* Colonel Von Ehwald's Treatise upon the duties of light troops, chap. ii. § 2, a work which has been frequently copied, but seldom improved upon. Mauvillon concurs with the Danish general in this sentiment, as may be seen in the second chapter of his *Essai sur l'Influence de la Poudre à Canon*: but general Von Ehwald was a light infantry officer, in which service the firing considerably predominates; and the latter, in the excellent work mentioned, has, per-

for firing, but to think even that martial appearance would not suffer from the change, after being reconciled to it by custom : this might be true ; yet, since the bayonet is indisputably the principal and the decisive weapon of the infantry ; and that, besides, in the present mode of arranging troops, the firing may be executed under any circumstances soever, if performed by soldiers properly trained to it, that mode of arraying the men, notwithstanding all that may be alleged in its behalf, does not apply to our battalions ; and though it might have answered the purpose of the American soldiers, whose chief dependance, at the period alluded to, was in their musketry, it would but ill suit a well disciplined infantry, particularly in war time : when pressed for men, a shorter size and an inferior description of recruits must be inevitably admitted into the ranks. The general practice of the principal, and I believe all, the European armies, which, in this particular, are perfectly in unison with the British, might here be likewise produced against it ; and the assertion receives still additional weight, from the Americans themselves having adopted, like the rest, the position in which the tallest men are brought to the front.

“The directed mode of sizing from both flanks to centre by companies, by removing the tallest and most able men to the two extremities, rests on a principle so much corresponding to that just spoken of, that if the one be admitted, the propriety of the latter can no longer be reasonably denied. How far it deserves a preference over the manner of the French, the Dutch, and the Prussians, where, beginning by the right, the shortest and weakest men are presented on the left of the company, must be evident, from one side, their mode, being only secured, and the other left exposed ; and though the regulation adopted by the Russians and Danes, where the sizing is central, and takes place through the whole battalion, or by the Austrians, where it is accomplished by divisions (a portion of the battalion which corresponds to what we call grand division in our formation), does not lay open to the same censure, it still leaves unprovided the cases where the companies or platoons (their *zuge*) act singly, as the shortest are then again all brought on one side.

“The flank of the platoons and subdivisions, as the positions which, owing to the peculiar duty of the pivots, call for the presence of the most intelligent men, have been very properly affixed to the corporals.

haps, throughout, not given sufficient weight to the charge. *Turpin de Crissé*, in his commentaries on *Vegetius*, and *Guibert*, in his *Essai général de tactique*, vol. i. chap. ii. recommend the mode in which the oldest and most valiant soldiers are to be selected for the front rank. General Wimpffen, in his *Militaire Expérimenté*, chap. xx. and *Warnery*, in his Commentaries, are of a contrary opinion, and say, that far from being brought to the front, those most valiant and oldest soldiers should be left in rear, to oblige those less courageous, and posted before them, to move on and do their duty.

"The number of files already determined, from 200 to 250, will immediately fix, when placed in three ranks, the battalions to be from 600 to 750 rank and file; however, allowing for the constant deduction, experienced by those on duty, sick, detached, &c. they may be increased to 900 without inconvenience.

"With the exception of the Austrian battalion, which is broken into thirds, sixths, and twelfth parts, the numbers most commonly used in the division of that body, are four and eight, or five and ten; of these, the smaller portions, eight and ten, are, according to the different services, denominated division, platoon, or *zuge*. In some services, as in the British and French infantries, each of them forms a company; whilst in others, like the Russians, Prussians, Danes, and Dutch, the company consists of two of them: the latter mode, by decreasing the number of captains, and fixing the chain of command by pointing out a determined chief in charge of each grand division, exhibits advantages*.

"The officers are either placed in the front, or in the supernumerary rank; the position of those in the first, is chiefly designed to lead, and by their personal example to animate their men, and excite them to the proper performance of their duties; one officer per division, or what we call company, becomes sufficient for that purpose; and as before observed, the flanks of a body are its weakest points, an officer is with great propriety, added to them on the left flank of the battalion: this however, is not repeated on the right, as that post is already so provided for, by being occupied by the grenadier or first company's captain.

"With the exception of the officers brought in the front, and the sergeants covering them in the rear rank, the remaining officers and sergeants are all situated in the fourth or supernumerary rank; their province, when so situated, is to keep the other ranks close during the attack, while firing, as well as to prevent any break in rear, and, in short, to detect and check any irregularities that may occur; these duties are obviously important, nor can too many officers and non-commissioned officers be so employed†.

"Though the distribution of the officers, as here explained, in front and in rear, meets with no objection, and the propriety for a portion

* We have already had occasion to notice the numbers four and eight, to be preferable, for the division of a battalion, to those of five and ten, which the elucidation of the movements will render evident: next to four and eight, that by thirds, sixths, and twelfths, seems best adapted; when so, the system and body of movements must, however, undergo some alteration, and be framed conformably.

† An exception to these rules, is when in mass, as the mode of lining the flanks by a complete file of officers and non-commissioned officers, as customary in the Austrian infantry, displays evidently advantages; the remaining officers and sergeants, after those to be placed on the flanks, and the few perhaps

of officers to be brought in the first rank, and thus made to mark the right of each platoon, is fully admitted, some difference of opinion prevails as to the description of officer who should be thus employed. General Warnery thinks it ought to be the first lieutenant, and not the captain, whose post he conceives to be in the rear of his company, and though general practice does not sanction, but rather discountenances such an assertion, the analogy it bears to the position of the battalion commander, pleads in its behalf; besides, as the captain is and ought to be, the responsible person for the conduct of his company, and from whom the different commands and directions it receives should emanate, it is evident that those duties are much easier and with much greater accuracy performed in rear, than if posted on a flank in the front rank, where his personal valour and example appear the principal, and almost the only springs, called into action.

"I shall now conclude what relates to the formation of the battalion, by observing the great advantage that results from the officers, particularly those invested with the responsibility, remaining attached to their respective companies; since, if they be displaced, it must immediately tend to alienate the officers from their men, as well as the men from their officers, and therefore spread indifference where too great a union cannot be promoted, and where the link of connexion should be tightened, instead of loosened: though the arrangements of the battalion might here interfere, the thwarting obstacles it presents will be easily removed, if the companies be always posted according to the seniority of the officers immediately present, a measure which, important in its consequence, is highly deserving the attention of officers in command of battalions."

The 2d chapter is dedicated to observations on the position and facings of the soldier, and on the step, march, and cadences used by the several infantries of Europe; the half-dressing and words of command are also noticed. In the 3d chapter, the principles on which the infantry movements are founded are explained and enumerated; and a historical sketch of the military art is given in the 4th chapter, from the period of the Greeks and Romans, to the present day; from which we extract the following:—

"Under Prince Maurice of Nassau, and under the renowned Gustavus Adolphus, the art gained space: forming themselves on the model of

to be posted in the centre, are situated, may, however, then again be removed to the rear, as customary in the British infantry for close column of grand divisions, and there forming a final rear rank, act on the principle of supernumeraries.

the ancients, the first in his encampments, and the latter in the disposition of his battles, revived the military ages of Greece and Rome. The Dutch tactics, regulated by Nassau, at this period became the pattern for Europe; and, owing to a happy succession of their valourous House of Orange, that mercantile commonwealth kept its military reputation for nearly a century*.

"In 1674 and 1675, Turenne and Montecuculi displayed to the world the first regular campaigns, conducted on lines of operations properly based; and shortly after this, Marechal Luxembourg, to gratify the ambitious views of his master, Louis XIV., led into the field prodigious armies, which, however numerous, he showed himself competent to command; whilst King William III. exhibited all the resources which perseverance and military skill could suggest, to check the progress of a victorious enemy: always defeated, but never subdued, after the loss of a battle, the British monarch remained the formidable foe he had been before. The Prince Eugene and our Marlborough, that general, whom Voltaire describes, as never to have given a battle which he did not win, nor besieged a town which he did not take, had both shone conspicuous in the annals of their time—yet the art of war was still in its infancy; the higher tactics were either destitute of rules, or erected on such irregular foundations, as were inconsistent with the dictates of reason; and, with the exception of the fortifications, and the attack and defence of fortresses and works, which, directed by Coehorn and Vanban, had taken a leap that left the other branches of the art far behind, the others, little cultivated, and chiefly influenced by the

* From General Bland's military treatise, it evidently appears, that most of our military practices are derived from the Dutch, and were chiefly introduced by William III.; that their attention to the exercise had not relaxed, even in his time, is also to be observed in his fourteenth article of the ninth chapter, in which he takes occasion, when describing a complicated platoon fire, then used by the Hollanders, much to praise their discipline. That the tactics of those republicans were no less esteemed by the French, may be seen by the following note 7. of the Introduction to the Discipline of the Norfolk Militia, by Viscount Townshend:—"Lewis XIV. in 1662, employed Mons. Martinet to regulate and discipline his infantry after the Dutch manner: he was first lieutenant-colonel, and afterwards colonel of the *regiment du roi*, or the king's own regiment, which was then the pattern. He was killed at the siege of Doseburg, in 1672. His name is become, among our military gentlemen, a term of sneer and reproach, too often applied to such officers as shame the rest of their corps, by being more assiduous and exact in the performance of their duty, than suits with the levity of the young, or the indolence of the old ones." Mons. de Montgommery de Corbosen, a French writer, who flourished under Charles IX. and Henry III. in his *Traité de la Milice Française*, extolling the Greek evolutions, as delineated by Ælien, assimilates their practices to those of the Dutch, under Prince Maurice of Nassau, which sufficiently betrays deficiency in the French at the time, as he would not have produced those foreigners, in preference to his own countrymen, had the latter been adequate to sustain the parallel; nor is this to be wondered at, when we are told by Father Daniel, that Montegon, another military writer, contemporary with Charles IX. complains that the soldiers of the guards were, in France, the only ones practised to their exercise.

flimsy purpose of parade, like the Gothick structure, were crowded with puerile and showy performances, to conceal the defects simplicity would have revealed.—Nor were the military writers of great assistance at the time: it is true, that the works of Cæsar, Polybius, Montecuculi, and Turenne, are all replete with luminous thoughts and useful remarks, but they need previous information to be duly appreciated—it requires the botanist to discover the valuable properties of the plant, and in those gardens in which the speculative delight and derive information at every step, the unobservant and common run of men discover but trees and leaves.

“Folard was the first who collected, methodically, the principles of tactics, which science he elucidated; but Folard, from having but little information to gain from the moderns, attached himself altogether to the ancients, on which he modelled our tactics: thus omitting the influence the difference of our weapons was necessary to produce, he mistook our formation, and created a column, which he recommended both as the natural position of, and almost constant position for the infantry. Thus was wasted considerable erudition, and perhaps some talent, in the attempt of propagating an error*.

“The writings of Marechal Feuquiere and Puysegur offer more instruction, but what they say must be received with caution, the art having undergone considerable alteration since they wrote. Puysegur still represents the circle as the most effectual formation against cavalry; the mode in which that circle was to move, whether in two lines which were to shut at the approach of the horse, or as the marshal seems himself to wish it, in a square, at open angles, were, at the time, subjects of disputations and controversies, which, as well as the original position which gave birth to them, have now justly subsided into oblivion.

“Marshal Saxe, in his military treatises, particularly in his *Réveries*, abounds with most ingenious and shrewd thoughts; but as, in pointing out the defects, he does not attempt to redress them, the art did not gain much by it; in fact he augmented the state of incertitude, created doubts, and increased the dilemma. Thus divested of a proper standard to go by, every novelty was grasped at, tried, and rejected, and, until some fresh attempt at improvement was devised, the time spent in wheeling and in marching, at open order, in countermarching by ranks or files, and in grounding the arms without bending the knee. The selection of the movements, from being likewise left unconstrained to each corps, and the imagination, at the stretch to find out, if not

* It was at the battle of Cassano, in 1705, that while lying down, in consequence of a wound, Folard first surmised his system and column. He attached himself afterwards to Charles XII. king of Sweden; and was, by that warrior, appointed to a great command in his intended expedition to Scotland, in favour of the Pretender. At the king's death, he returned to France.

something more appropriate, at least something more uncommon, it was discovered that troops might be shaped in the form of letters; sentences were accordingly moved, to the great amazement and delight of the gazing multitude; and *Monsieur de Chevert*, the *aide major* of the regiment of *Beauce*, a situation which, in our service, corresponds to that of adjutant, derived no small applause from drawing that corps at the conclusion of the inspection, in the form of *vive le roi*, and thus firing the *feu de joie* by which it terminated*.

"A considerable alteration, however, had taken place in the mode of warfare; which alteration undergoing daily improvement, had, at the period we are now speaking of, attained an excellence to which the tactics themselves could not pretend,—it is the introduction of gunpowder to which I am alluding. This inflammatory composition, the accidental discovery of Bartholomew Schwartz, a German monk, in the year 1320, was, after a short lapse of time, adapted to warlike purposes; the first instance recorded with any certainty, in history, where those powerful engines are thus directed to the destruction of mankind is, in a war the Venetians waged against those of Genoa, in which the former are represented as carrying along with them a few pieces of artillery, and using them at the siege of Fosse Caudiane, now Chioggia, (*l'Artillerie raisonnée par Le Blond*, vol. i. chap. i. art. i.) Ever since, their names almost constantly occur in every military transaction; their early application was, however, more confined to sieges, than extended to the field†, yet at the battle of Cressy two pieces of cannon

* Guibert, *Essai Général de Tactique, Infanterie*, chap. vii. According to Groce, in his *Military Antiquities*, our infantry was at that time also very busily employed in mathematical pursuits, and in forming wings, wedges, rhombs, squares, triangles, the sheers, the saw, and a variety of other whimsical figures. "It does not appear," he adds, "that any great attention was paid to the mode of marching or dressing, or that the officers of that time had the least idea of the points of direction or alignment," vol. i. chap. ii. These objects being probably deemed of no moment; but nothing will display so much the absence of all rules, and the subversion of all military principles, as the description the same writer gives of the evolutions, used at the time by the horse grenadiers, where the flower of the cavalry is literally dismounted, probably in imitation of the Romans at Cannæ, and after being thus manœuvred, brought on horseback, to fire their pistols; the passage runs as follows, "The horse grenadiers then acted like a company of grenadiers to a battalion, and were armed with muskets and grenades, linked their horses, dismounted, fired, screwed their daggers into the muzzles of their muskets, charged, returned their daggers, fired, and threw their grenades by ranks, the centre and rear ranks advancing in succession through the intervals between their file-leaders; they then grounded their arms, went to the right about, dispersed, and, at the preparative or beating to arms, drew their swords, and stood by their arms, falling in with a huzza! they then returned their swords, shouldered and slung their muskets, marched to their horses, unlinked and mounted; after which, they fired their pistols and muskets, on horseback."

† "Philostratus speaks of a city, near the river Hyphasis, in the Indies, which was said to be impregnable, and its inhabitants said to be relations of the gods, because they threw thunder and lightning upon their enemies; hence some imagine that guns were used by the eastern nations, even in the time of

attached to the English army are noticed, and by dismaying the French said to have much contributed to the result of the day : at the battle of Lutzen leather guns are described, as the ordnance of the Swedes.

Alexander the Great; but, however this may be, many of our modern travellers assert that they were used in China as far back as the year of Christ 85, and have continued in use ever since."

"The first hint of the invention of gunpowder in Europe is in the works of Roger Bacon, who flourished in the thirteenth century, in a treatise written by him about the year 1280, (*de Secret op Artis et Naturæ*); he proposes to apply the violent explosive force of gunpowder for the destruction of armies. In 1320, Bartholomew Schwartz, a German monk, is commonly said to have invented gunpowder, though it is certainly known that this composition is described by Bacon, in some of his treatises, long before the time of Schwartz. The following is said to have been the manner in which Schwartz invented the gunpowder:—Having pounded the materials for it in a mortar, which he afterwards covered with a stone, a spark of fire accidentally fell into the mortar, and set the mixture on fire; upon which the explosion blew the stone to a considerable distance; hence it is probable that Schwartz might be taught the simplest method of applying it in war; for Bacon seems rather to have conceived the manner of using it to be by the violent effort of the flame unconfined, and which is indeed capable of producing astonishing effects. The figure and name of *mortar*, given to a species of old artillery, and their employment, (which was throwing great stone bullets at an elevation) very much corroborates the conjecture."—*Encyclopædia Britannica*—*word Gun*.

But, leaving all Asiatic pretensions aside, this war of the Venetians against those of Genoa is commonly considered as the first authentic instance of the use of gunpowder, it being the first time it is mentioned with any degree of certainty. The honour of having fired the first gun has not been, however, so placidly admitted to the Italian artillery, as not to meet with considerable objection, since, whilst the chronicles of Alphonse XI. are produced to prove that the Moors, at the siege of Algesiras, in 1343, fired certain thunder through long troughs of iron, John Barbour, Archdeacon of Aberdeen, lays still a pretension to greater antiquity, in behalf of the English, by providing Edward III. with those engines, which he calls *crakys of war*, in his first expedition against the Scotch, 1327, as may be seen in his metrical life of King Robert Bruce, p. 408, 409.

Twa' novelties that day the' saw,
That forouth in Scotland had been nane,
Timbers of helmes was the aue,
That they thought then of great beautie,
And also wonder for to see;
The other crakys were of war,
That they before heard never air.

Henry's History of Great Britain, b. iv. ch. 5. §. 1.

Father Daniel does not go so far, as he does not venture to establish the claim of the French beyond the year 1338, at which period, he says, the use of guns is testified on record by a document still extant, alluding to some expense incurred for their use. In the early introduction of artillery, the pieces were more of the mortar than of the gun kind, as they had chambers; the bullets were of stone, and those latter, when of a monstrous size, were greatly preferred. Mahomet II., when he besieged Constantinople in 1453, had pieces of 1260 pounds calibre, but these bulky machines could only perform three or four times a day, and then not unfrequently burst in the attempt of firing. Rymer mentions an order of Henry V. for 7,000 stone shots to be cut in the neighbourhood of Maidstone-heath; under Henry VII. and Henry VIII. a swarm of foreign gunners are reported to have come over to improve the English artillery; but whether it were for want of knowing the language, or knowledge of the very science they undertook to teach, what they wrote was very bad, or is,

The prodigious results derived from the use of gunpowder in the artillery, naturally led to the invention of small fire-arms; the first which were produced, the awkward hand culivers, or culverines, required a rest to be fixed on, and as they were heavy and troublesome, they were soon replaced by the harquebuses, a much lighter contrivance; these were first employed by the Spaniards, whose harquebusers were particularly conspicuous at the battle of Pavia, between Francis I. and Charles V. where they completely routed the French cavalry; but, notwithstanding this successful application, these again were soon dismissed for the musket, a match-lock, on whose adoption, (this being a much superior weapon), the proportion of pikes gradually decreased in the infantry, and brought down to a third, by Gustavus Adolphus: they were in 1702, the beginning of the Spanish succession war, already reduced to a fifth; and when, at last, the firelock appeared crowned with its bayonet, their disuse became general*. The Germans

at least, so represented by William Bourne, author of a treatise on the *Art of Shooting in Great Ordnance*, printed at London in 1587.

The first guns cast in England, were under Henry VIII. according to some in 1521, and others in 1535, when a foundry was established by Owen, an Englishman. According to Camden, gunpowder was not fabricated in England before queen Elizabeth: "Such as desire to know the pedigree and progress of great guns in England, may be pleased to take notice," says Fuller, in his History of the Worthies of England, vol. ii. Sussex manufactories of great guns.

"1. Anno 1535, John Oeven was the first Englishman who, in England, cast brass ordnance, cannons, culverings, &c."

"2. Peter Baud, a Frenchman, in the first of King Edward VI. was the first who, in England, cast iron ordnance, falcons, falconers, minions, &c."

"3. Thomas Johnson, covenant-servant to Peter aforesaid, succeeded and exceeded his master, casting them clearer and better. He died about 1600."

"Some observe, that God hath so equally divided the advantages of weapons between us and Spain, that their steel makes the best swords, our iron the most useful ordnance."

The first account of shells is at the siege of Naples, by Charles VIII. in 1435, though it is with more certainty removed to 1588, the seige of Wachtendonk, in Guelderland, by the Earl of Mansfield. The first practice of red-hot shells, out of mortars, seems to have been at the siege of Stralsund, in 1675, by the Elector of Brandenburg (*Memoires du Marquis de Feuquiére*). The petard, a French invention, was first used in 1579, by Henry IV. of France, when only King of Navarre, and was employed, in 1641, by the parliamentary forces, under Sir William Walter and Colonel Brown, to blow open the gate of Arundel-castle.

* The various descriptions of arms the foot soldiers have been in succession provided with, are the *hand cannons, hand culverines, hand guns, hackbuts, harquebuses, muskets, calivers*, (a light match-lock, supposed to be so called, from their having been made at first of the small calibre,) and finally, the *fire-locks* originally named *maphanne*.

The French writers generally fix the disuse of slings about the time of *Philip Augustus*, which corresponds to our king John and Henry III.; but a later instance might, however, be produced under *Philip de Valois*, when, in the contest between *Charles de Blois* and the Earl of Mountfort, for the dukedom of Brittany, this weapon is mentioned in an engagement between *Sir Gauthier de Maurel*, an English knight, and *Louis d'Espagne*. The Hugonots, to spare their ammunition, defended themselves at Sancerre, also with slings, in 1572. The great partiality the English shewed for the bow, a weapon in which they

were the nation that took the lead in this alteration, which was followed by the French, in 1703, when, by an ordinance, the final abolition of

greatly excelled, secured its continuance in the British isle far beyond its time of preservation among the neighbouring kingdoms, in which, with the exception of the pike, the whole of the other weapons in use before, almost immediately yielded to the fire-arms, on their first appearance. In an expedition, undertaken by Henry VIII. to attack (in conjunction with Maximilian, emperor of Germany, Ferdinand, king of Spain, and the Swiss) Louis XII. king of France, a considerable body of archers are enumerated amongst the force; (*Hume*, vol. iv. chap. viii. No. 14); and from instructions issued by his daughter Elizabeth to the counties, in 1752, we learn, that of 100 foot soldiers, 40 were to be arquebuses, 20 archers, if as many could be found, and the rest to be *bill-men*, *halbediers*, and *morris-pikes*, (which latter were pike-men, drilled according to the system of prince Maurice of Nassau). By a treaty concluded the same year with Charles IX. of France, it is also stipulated, that the queen was to furnish him with 6000 men, of which some were to be armed with long, and the other with cross-bows. By a letter of Camden to Sir Edward Cecil, it may be observed, however, that a considerable change tending to the increase of fire-arms, took place in the latter part of Elizabeth's reign; those innovations were chiefly conducted by a Captain Morgan, and Sir Roger Williams, with others who had served in Holland, under the celebrated Duke of Alva, but strenuously resisted by *Captain Pykeman*, *Captain Reade*, and *Sir William Pelham*, who by way of derision, and from their pertinent adherence to the old notions, were called *Sainte George's Souldados*; but this did not deter a *Sir John Smythe*, who had, however, served himself under the constable De Montmorency and the Duke of Alva, still to side with them, and to write a great deal in behalf of archery; but, except *Certain Discourses* printed in quarto, in 1590, nothing of it was published. Under Charles I. a strong attempt was again made to revive the bow, by William Read, who adding a spear to it, had the exercise of this double armed man, as it was denominated, performed in St. James's Park, in the presence of the king and his council, who were all much pleased with the contrivance, greatly applauded it, but at first, neglected both Mr. Read and his bow; yet afterwards, it was taken in hand, and directions were sent to the magistrates all over England, to promote the instruction of this warlike invention, as it was then styled. *Ward*, who in his *Animadversions of Warre*, conceives this double arm, as more fit for the skirmishers, than the *maine battalia's*, concludes by observing, that "questionlesse in time of stormie wet weather, these bowes would doe great service, when the musquet cannot be discharged for wet." The last time our English historians record the bow, is in 1627, at the attack of the Isle of Rhee; amongst the Scotch this weapon is still frequently observed, and mentioned in the victories of the gallant Montrose.

Neither was the bow nor cross-bow totally laid aside by the French under Francis I. as 200 mounted cross-bow men of his guards are much celebrated at the battle of Marignan, which he gained over the Swiss.

At the battle of Raub, or St. Gothard, Montecuculi tells us, in his *Memoirs*, b. iii. chap. iv. No. 53, that he placed his musqueteers in two ranks, supported by four ranks of pikes; but this was not the formation generally adopted, as the latter were, in preference, brought in the centre with the fire-arms on the flanks, by which means the battalion was divided into three bodies, the right and left wing of musqueteers, and a centre division of pikes; this was the disposition in which Gustavus Adolphus commonly placed his infantry, and that mode of arraying seems to have prevailed till the exclusive adoption of the musket, and abolition of the pikes, an event which, by royal ordinance, took place in France, in 1703, and was shortly followed up in Britain, as the regulations of 1690 still retain the pike exercise, and the *Gentleman's Dictionary* printed in 1705, explains it as a weapon no longer in use.

The honor of the introduction of small fire-arms in England, is given to Edward IV. who, landing at Ravensburgh, in Yorkshire, on his return to

the pike received the sanction of authority, in compliance with the strong representations of Marshal Vauban, and much against the wish of Monsieur D'Artagan, afterwards known by the name of Marshal Montesquieu, who was very clamorous for their preservation, while both Folard and Mezeray took up the pen in their defence; nor was this sentiment confined to them, as many in England, as well as in that country, much lamented the loss of the pike and the bow; nay, the Marshal Saxe, as far as we can judge by his works, was not himself altogether free from the contagion, and was far from being convinced of the propriety exclusively to adopt the fire-arms; however, this question is now at rest, as no doubt is any longer entertained as to the propriety of arming the men with firelocks. But whilst a progressive advancement had thus taken place in the weapons of warfare, the knowledge of the movements had not kept pace with it; the deficiency was felt, but not remedied, and though the necessity for a change was universally admitted, as no individual had been happy enough to discover the vein, the mine was yet left unexplored.

"It was not before Frederick II. ascended the Prussian throne, that the military science assumed its proper form; under that king, to whom the name of Great has been so deservedly bestowed, every branch of the profession underwent an alteration, which amounted to a considerable improvement. The infantry, which had exchanged its wooden for the steel ramrods, and had been trained to the regular pace (both circumstances, owing to the Prince of Anhalt Dessau*), was now reduced from one to three ranks, and practised to such manœuvres as, congenial to their weapons, were conformable to the intentions of that corps; and while the infantry was thus deriving the salutary effect,

England in 1471, brought over 300 Flemings so armed with *hange gunnes*. Though muskets were used, it is said, as far back as 1521, at the siege of Parma; it was, according to *Brantome*, the Duke of Alva who first armed the infantry with this weapon, an innovation he effected in 1567, on taking the command of the Low Countries. A great proportion of the foot soldiers in the British army were armed with firelocks instead of match-locks, in 1686, at which time the use of the bayonet began also to be known, as well as the firing in several ranks, the front rank kneeling, which latter contrivance is mentioned to have been first practised by the Swedes.

The firelock is supposed to be of Dutch origin, from its being first called *snaphanc*, the name still given to it in that tongue: it was the 7th, 21st, and 23d regiments, which, in our service, were the first armed with firelocks instead of muskets, and from that circumstance, have retained the name of *fusiliers*, derived from *fusil*, the French appellation of a firelock: the bayonet, which is now fixed to it, is of a later invention, and generally attributed to Marshal Puysegur; its first trial took place, it is said, in the beginning of the reign of Louis XIV. In this, and in the preceding note, amongst the different works I have derived information from, I am particularly indebted to *Grœr's Military Antiquities*, and *L' Histoire de la Milice Française du Père Daniel*, most able productions, which have thrown such a light on the military history of England, France, and of Europe in general.

* This Prince of Anhalt-Dessau is the same, we have spoken of before, and who commanded the Prussians, in the Spanish succession war.

from being under a sovereign able to trace out the hidden rules of war, and to introduce what he had thus discovered, without alloy, for it required both genius and authority to accomplish what he did, the cavalry entrusted to Seydlitz, was still undergoing a greater reform. That corps, which heretofore had been in the habit of firing, and of moving at the jog trot, or to disperse *à la debandade*, as it was customary among the French, was now brought to manœuvre at full speed, to gallop in column, to wheel into line, and to charge in career*. Thus was the superiority of the Prussian troops established†, when the seven years' war broke out, and called into action those great powers which their monarch was known to possess; besides the lessons, both in strategicks‡ and tacticks, which the example of so great a warrior afforded, and which are so ably recorded by Tempelhoff§, the system of warfare underwent considerable alterations. Marshal Daun, aware that the superiority he had in numbers, could not compensate for the distance at which he stood from a Frederick, in those qualities which constitute the greater soldier, had recourse to those adscititious means, which,

* Instances, previous to this reform of the Prussian cavalry, may however be produced, where the horse have been made to charge in gallop, as both the Spanish cavalry and the Swedish, under Charles XII. are occasionally represented as having thus overturned the enemy. In 1734, at the battle of Guastella, the French horse placed in three ranks, advanced in trot, till drawing near the Austrian horse, when, on the command of the Duke de Chatillon, their leader, they rapidly rushed forward, and routed the Germans, who remained stationary awaiting their attack; this unaccountable mode of proceeding in the latter, in the management of a corps whose chief strength depends on the rapidity of its movements, shows evidently how little the principles of the cavalry manœuvres were understood at the time; yet this was repeated in 1745 at Soor, where the Austrian cavalry, again stationary, was busied again in firing their carbines on the approaching Prussians, and was altogether broken before the men could so much as unsheath their sabres. In a French work, *Essai sur la Science de la Guerre*, printed in 1751, the orderly advance in gallop of a single squadron is questioned, and the attempt of thus moving rapidly a longer line of cavalry viewed as exceedingly hazardous in the presence of an enemy. An officer, however, who at that period seems to have entertained true notions respecting that corps, is the Marshal Saxe, as may be seen by his *Réveries*, vol. i. chap. iii. art. 4.

† In the writings of Count Guibert, as well as in the original work of Sir David Dundas, the great precision attained by the Prussians in their military movements at that period, is fully exemplified: amongst other instances, thirty-five squadrons are said, by the latter, to have deployed in perfect dress, within two minutes.

‡ Strategicks are the movements made out of sight of an enemy, tacticks those performed within sight; the former relate more to the marches of an army, and are exclusively the science of the general, the others bear a nearer relation to the evolutions of the particular corps, infantry and cavalry: strategical movements may lead to a victory, but the victory itself must depend on the prompt and regular execution of the combined series of well adopted tactical

§ Tempelhoff geschichten der sieben Jährigen krieges. A history of that war, from Lloyd, Tempelhoff, and Jomini, has likewise been published by Major Smith.

being of a protecting nature, could enable him to carry on a defensive war. The artillery was, accordingly, much increased during those seven campaigns*, and the additional caution used in the encampments, as well as while on the march, tended to improve the knowledge of taking up positions, as well as the science of field engineering; those branches of the profession therefore experienced much progress during that extraordinary contest. The keeping up the forces united, so as to attack, invariably, in a body collected, which is the strong character of Frederick's strategicks, was little followed up in the revolutionary war†. The cautionary measures of Marshal Daun, to the utmost admissible, when opposed to an hero like the one he had to cope with, in leading the Austrian generals insensibly into the dangerous system of the *cordon* or chain, as it was denominated, betrayed them into the pernicious practice of dividing and subdividing their forces; thus, in attempting to cover the whole line of frontiers, they found themselves unequal to maintain the few points it was important to preserve, and while they were garrisoning every village, they were obliged, after a series of misfortunes, to relinquish whole provinces and countries‡.

The considerable augmentation in numbers, which the armies besides experienced during that calamitous period, by augmenting the perplexity, already so great, respecting the provisions, as well as every other circumstance unavoidably attending such an increase, rendered the conducting of such an army of much greater difficulty. France proved more fortunate than her opponents, in meeting with commanders adequate to the task; and it is to this, much more than her superiority in numbers, that the surprising successes of that nation are to be ascribed. The Count Clairfait, the Archduke Charles, and General Bellegarde, for awhile stopped the progress of its armies; but after the death of the first, and the appearance of Buonaparte on the stage of events, no effectual resistance was any longer offered to their victorious career: like Frederick the Great, Buonaparte invariably presented his masses, collected for action, on the decisive point, but his manner of warfare differed from the former in the disposition of his troops, which were spread about the country previous to conflict, and merely assembled when required to give the decisive blow§: this system had the twofold advantages, first, to facilitate the means of providing for so

* Letter of the King of Prussia to General Fouquet, dated Breslau, Dec. 1758, and the answer of that general, dated Leobschütz, Jan. 2, 1759, inserted in the military works of Frederick the Great.

† The Revolutionary War commenced in 1792.

‡ In the *Suite du Traité des grandes Opérations Militaires*, vol. v. and vi. Jomini chiefly accounts for the losses sustained by the Allies in the campaigns of 1792, 1793, 1794, and 1795, as occasioned by their system of dividing and subdividing their forces, and from their being, owing to this circumstance, always inferior, and always defeated by stronger numbers in detail.

§ Jomini's *Suite du Traité des grandes Opérations Militaires*, vol. i. chap. i.

numerous a body; and secondly, to conceal the design and point of attack: but though the masterly manner in which he moved those separate divisions to the spot where their united efforts were to act decisively, as well as the wonderful skill with which he improved the advantages resulting from a victory, will protect his name, and place it ever amongst the warriors of the first magnitude, yet his method of operating was not unexceptionable; it very nearly failed at Austerlitz*, where Bernadotte and Davoust joined only the night which preceded the battle, and did completely so at Waterloo, where Grouchy never appeared. Confident in his fortune, or more likely in the prodigious abilities it had pleased Omnipotence to endow him with, and which he was conscious of possessing, Buonaparte occasionally neglected the minor rules, but generally suffered for it; before Mantua, he was threatened by Wurmser, yet, re-assembling his forces, he fell on the Austrian general, who imprudently had offered two armies, and thus, though considerably superior in numbers to the French, was successively defeated at Lonato and Castiglione; as in both points inferior to them†. After the battle of Esling, where he was worsted by the Archduke Charles, the situation of Buonaparte became truly critical, yet, at that time, again he was fortunate, or skilful, enough, to extricate himself; but, taking no warnings from these repeated admonitions, he, at last, lost himself in Russia, where his retreat from Moscow (if it can be so called) threw a great blemish on his military reputation. The unexpected and won-

* Had it not been for some alterations the disposition of the Russian army underwent, the French would have been attacked two or three days before, and if so, neither Bernadotte's nor Davoust's divisions would have been present at the battle of Austerlitz.—*Bataille d'Austerlitz, par le général Major Stutterheim, an Austrian officer.*

† History abounds with instances, where generals, of great skill, have committed their reputation by transgressing this rule of union, and by dividing their forces. Montecuculi, who, in his Memoirs, takes particular notice of this error, observes that Walstein, who had been careful throughout to avoid this mistake, and to keep his troops together, neglected it at Lutzen, when sending two detachments, the one under Pappenheim, to Halle, in Saxony, and the other under Galas into Silesia, he was attacked and defeated by the King of Sweden. Jomini offers much instruction on this head, and, in his works, lays great stress on the necessity of operating collected, and avoiding detachments. This sentiment runs also through the works of Frederick the Great, who does not confine himself merely to the recommendation of acting in a body, but devoted the whole of the tenth chapter of his Military Instructions to enumerate the dangers attending the formation of strong detachments, and thus weakening the main army. Instructive details respecting the disposition of a considerable force, and the co-operating movements of the different corps that constitute an army, so as to preserve the proximity required to guard against partial attacks, may be found in Rogniat's *Considérations sur l'Art de la Guerre*; and if universality of acquiescence is any way calculated to add weight to opinion, and the principle of union derives fresh strength from its being delivered at Nanking, as well as at Berlin and Paris, it may be, perhaps, of some utility to mention, that "Whether you be an assailant, or on the defensive, if you will vanquish, keep together," is the lesson given to his brother soldiers, by Sun-tse, a Chinese warrior, whose achievements are still celebrated in the East, and whose military works are held in the greatest estimation by his countrymen.

derful resistance the Spanish offered to the usurper's attempt to reduce their country to a vassal kingdom, as well as the glorious campaigns the Duke of Wellington waged in the Peninsula, where the French eagles were constantly put to the flight, and compelled to abandon a country they already deemed their prey, at last roused Europe to arms. Beholding with surprise the victorious British—invited to follow their example, they arose with a determination to obliterate their former disasters, by freeing themselves from the dishonourable yoke which had been imposed upon them: the Allies were repulsed in Saxony, but not defeated, and they took their revenge at Leipzig; and, after crossing the Rhine, a well conducted campaign of the Prince Schwartzberg, seconded by the veteran Blücher, was crowned by the conquest of Paris, while the Duke of Wellington, answering their call, was planting his victorious standards on the walls of Toulouse.

“The next war, which broke out on account of Buonaparte's unexpected reappearance in France, was short. Murat, who rushed from Naples as the deliverer of Italy, was, after being defeated by Baron de Frimont, himself driven out of that country, and dethroned by General Nugent*; and these propitious commencements still more fortunately terminated by adding fresh laurels to our British hero, who had now, at Waterloo, the glorious opportunity of worsting the flower of the French army, led by their favourite chief, and of completing his former successes by the capture of the French capital.”

The author follows up these observations with a chapter on the elementary movements of Infantry, containing remarks on the taking of open and close order, increase and diminution of ranks, doubling of files, removal of troops, march to the front and rear, side step, oblique and file marching, obliquing by files, turnings, wheelings, and countermarchings.

The open column and the column of route are successively treated on, in the 6th, 7th, and 8th chapters;

* The last operation of the Austrian army against Naples, in 1821, was, through the masterly disposition and rapid advance of their leader, the Baron de Frimont, so speedily terminated, that it can hardly be ranked among the European wars, nor would it scarcely deserve any notice, were it not for the corroborating proof it affords of the power of acting in mass, which was the strong characteristic of the strategical movements of that able Austrian general, and to which he owed his immediate success. As to the occupation of Spain by the French army in 1823, it was conducted on the same principles. The general disposition of the Duc d'Angoulême was skilful; and if the friendly manner in which his army was received by a generous nation, that was averse to the ridiculous innovations which were attempted to be introduced, afforded no great opportunity for exertion to his troops: the brilliant action of Trocadero still remains to prove what his men were capable of, while the exact discipline kept throughout will ever reflect the greatest credit on the French army, as well as on its gallant commander.

and the movements in, and formations from echelon, file, and line, in the 9th, 10th, and 11th. Chapters 12 and 13 treat of squares, and of the reserve or 2d lines; and 14 and 15, which conclude the work, of firing, and the actions in which Infantry may be engaged. We hope to offer some interesting extracts from the two last chapters in our next.

ARTICLE III.

ON THE EXCLUSION OF HIS MAJESTY'S OFFICERS

FROM

THE INDIAN STAFF;

Being in Reply to a portion of a Pamphlet published "by a King's Officer," entitled "Remarks on the Exclusion of Officers of His Majesty's Service from the Staff of the Indian Army; and on the Present State of the European Soldier in India, &c. &c." London. G. Underwood. pp. 136. 1825.



To the Editor of the British Indian Military Repository.

SIR,

The army and regimental staff appointments held by the officers of His Majesty's forces, serving within the territories, and in the pay of the Honorable East India Company, not being considered to be on a scale adequate to their just claims; and circumstances seeming likely to call 'for large additions to the number of His Majesty's troops employed in India,' "a King's Officer," perceiving, I suppose, no prospect of the Ministry of the Crown enlarging the scale of staff already granted for the 20,000 king's troops, (who scarcely form a tenth part of our Indian army,) and prompted no doubt by a very natural anxiety to see his comrades of the Royal service, and perhaps himself, participating more largely than heretofore in the appointments of the Honorable East India Company's Service, appears, early last year, to have published in London, certain "Remarks on the Exclusion of officers of His Majesty's Service, from the Staff of the Indian Army;" the observations contained in which, are said to have attracted some attention at the Horse Guards.

2. I must not omit to mention, that another and highly interesting subject, viz. "the present state of the European soldier in India," is treated at considerable length, and occasionally with much judgment in this little pam-

phlet, "whether as regards his services, health, or moral character; while a few of the most eligible means of modifying the one, and improving the other," are "considered and advocated."

3. Most of the author's propositions for improving the condition of this class of our soldiery, appear highly worthy of adoption. But I regret to observe him attempting to throw upon the East India Company, and their local Governments, the opprobrium of evincing no kind feeling on this point.

4. The churches, the regimental schools and libraries, at all the cantonments of British India, wherever European corps are stationed, (to say nothing of places of amusement for the men, or of the handsome additional support given to the wives, to the children, and to the orphans of the soldiery*,) form at once the readiest and most public refutation of the insinuations the author has hazarded regarding this matter; on which it might be improper for me to say more, than that its immediate controul has always directly belonged more to the chief *military* authority, who is generally "a King's Officer," than to the local governments. I shall therefore content myself by dismissing my notice of this portion of the author's work, by strongly recommending the perusal of it to your readers. The justice of his remarks on the system of the European soldier's half and full batta in Bengal, and on the pernicious effects arising from the issue of raw spirits to the European soldiery in cantonments, must be acknowledged by every officer who has served with that class of our forces; and although some may think his observations on the quality of meat generally supplied by our Commissariat too severe, others may be of a different opinion.

5. The writer of the pamphlet in question, who seems to be an officer of His Majesty's 17th Regiment of foot, would appear to have met with Lieutenant A. White's

* The "King's Officer" acknowledges, that "the East India Company liberally allow every soldier's wife, present with his regiment, 8 Rs. and every soldier's child, whether *legitimate* or not, 3 Rs. per mensem."

“Considerations on the State of British India,” about the period, when under the necessity of returning to England with his regiment, “with as little reference to his choice or advantage, as when he first quitted his long left native land;” and to have thrown together the observations his pamphlet contains, when thus peculiarly out of humor with Lieutenant White’s arguments.

6. When in the body of the work, I found him advertising “to the present restrictions, amounting *almost* to the exclusion of King’s officers from the Indian staff, and commands of trust and emolument,” and treating on the policy of instituting a “*more* equitable distribution of rewards and distinctions between both services,” I was struck with his thus indirectly, but awkwardly acknowledging, that His Majesty’s officers were not so *wholly* excluded from the Indian staff, as the title of his pamphlet implies; and naturally looked for a quotation of the *official* restriction, shewing the *degree* of their exclusion. But Lieutenant White’s book, and some tables formed from the Calcutta Directory for 1822, comprize all this “officer’s” authority for asserting “the exclusion of the officers of His Majesty’s service from the staff of the Indian army.”

7. The following is an extract from the work :—

“Wishing to adopt some simple means, by which a fair and ready criterion might be formed of the proportion which the officers of His Majesty’s service actually holding Staff situations in India, bear to those of the Honourable Company’s army, I consulted at a venture the Calcutta Directory for 1822, and framed from its army list two abstract Tables of the number of officers in each branch of the service then doing duty and holding *Staff appointments of all denominations* on the Bengal Establishment; from which it will be seen, that out of 1363 officers of all ranks then present with the Company’s army, no less than 535, or considerably more than $\frac{1}{3}$ d, were employed on the General and Regimental Staff; while in the King’s service, the number of officers present with the seven regiments on that establishment was 227, and the number holding general and regimental Staff appointments, including five officers either belonging to corps not in India, or on half pay, was 19, or nearly $\frac{1}{11}$ th of the whole: a proportion not much in favour of my opponent’s arguments. But let the Tables speak for themselves.

General Abstract of the Number of Officers of the Honourable Company's Service on the Bengal Establishment in 1822, exclusive of general Officers in England, and wanting to complete, shewing the Number absent, those actually present, and the proportion holding Staff Appointments.

Corps. .	Total of Corps if complete.	Total No. then in each corps.	Total Number absent.	Total Number on staff.
1 Corps of Engineers,	88	34	} 305	23
8 Regiments of Native Cavalry, . .	172	160		38
4 Battalions and one Horse Brigade of Artillery, }	180	170		45
1 Regiment of European Infantry, }	45	44		8
30 Regiments of Native Infantry, of 2 Battalions each, }	1350	1260		421
Totals, ..	1795	1668	305	535
Absent on leave and furlough, ..		305		
Total present, ..		1363		

Which sum, divided by 535, the number on the general and regimental Staff, gives a proportion of $\frac{1363}{535}$, or considerably more than $\frac{1}{3}$ d of the number then present employed on the Staff, or little short of $\frac{1}{3}$ d of the whole army, even after deducting the number of officers in the Engineers, who are properly speaking all Staff.

Abstract of the Number of Officers of his Majesty's Service belonging to the different Corps serving on the Bengal Presidency in 1822, shewing the Number Absent, (including) the Number actually Present, and the Proportion employed on the General and Regimental Staff.

Corps.	Total of Corps.	Total Present.	Total Absent.	Total on Staff.
8th Light Dragoons,	40	26	14	2
11th Do. Do.	40	33	7	2
14th Regiment of Foot,	48	36	12	3
17th Do. Do.	48	33	15	3
24th Do. Do.	48	33	15	3
59th Do. Do.	48	31	17	3
87th Do. Do.	48	35	13	3
Total, ..	320	227	90	19

Shewing the proportion on the Staff to be 19, or $\frac{1}{11}$ th of those present, or, including those absent on duty in England, near $\frac{1}{11}$ th of the whole. It is, however, proper to observe, that the seven regimental Quarter Masters, being warrant officers, are not included in the above.

Should the foregoing Tables not prove sufficiently satisfactory, all that remains to be done is to enumerate the whole of the regular Staff appointments, either considered open to, or then actually held by, officers of his Majesty's army; and I am persuaded the view thereby exhibited will be found still more unfavourable to that service; *viz.*

On the Staff of the Governor General and Commander in Chief, say, ..	6
Adjutant General King's troops,	1
Assistant Do. Do.	1
Quarter Master General King's troops,	1
Adjutants to corps,	7
A. D. C. to the two General Officers on the Staff, ..	2
Brigade Major King's troops,	1
And two General Officers on the Staff (though there were none present in 1822,)	2

Total 21

Contrasted with the following voluminous list of Staff appointments of all denominations then enjoyed by officers of the Company's army; *viz.*

On the Staff of the Governor General and Commander in Chief, say, equal to King's Officers,	6
General Officers commanding Divisions,	8
Staff to do.	10
Field Officers (Brigadiers) commanding advanced corps or posts, ..	8
General Staff of Fort William, &c.	9
Adjutant General's Department,	6
Quarter Master General's do.	20
Commissariat Department,	34
Ordnance Commissariat,	8
Auditor General's Department,	4
Pay Department,	10
Military Board Office,	4
Judge Advocate General and Deputies,	7
Agent, for Gun Powder, Gun Carriages, Timber, Clothing, &c. &c. ..	9
Barrack Department, including Superintendants of Buildings, ..	32
Surveyor General's Department and Telegraphic Communications, ..	20
Stud and Cattle Departments,	12
Brigade Majors of Divisions,	14

Appointments connected with Engineers' Departments, the Golundaz Brigade, the Corps of Sappers and Miners, and Pioneers*, the Governor General's Body Guard, the Calcutta Militia, the 5 Corps of Irregular Cavalry, 11 Irregular and Hill Corps, 4 Battalions of Infantry Levies,

Carry forward, 221

* It is proper to remark, that since the above was written, the Barrack Department, and the charge of the Pioneer and Sapper and Minor corps, have been transferred to the Engineers.

	Brought forward,	221
and 14 Local and Provincial Battalions, amounting to at least 100 more,—say, .. ..	.. ..	190
To which add the following regimental Staff of Corps; viz.		
4 Battalions and 1 Horse Brigade of Artillery, and 1 Regiment of European Infantry, .. ..	.. ..	12
8 Regiments of Native Cavalry, .. ..	.. ..	16
60 Battalions of Native Infantry, .. ..	.. ..	120
And a variety of other Staff appointments, of a mixed civil, political, and military character,—detached and foreign commands, and other situations of trust and emolument, which cannot conveniently be enumerated, amounting to at least 60 more, exclusive of the various temporary Staff incident to actual service, .. ..	.. ..	60
Making a grand total (nearly corresponding with the first Table) of .. ..	.. ..	539

8. After examining the foregoing tables and sketches, I agree with the author that “critically minute exactness in the numbers and names of the different staff appointments has not been attempted.” But I feel assured he will not agree with me, that an erroneous view of the highly important question at issue has been addressed by him “to the gracious consideration of His Royal Highness the Commander in Chief of the British army, to the impartial attention of the Honorable the Chairman and Court of Directors of the Affairs of British India, and to the liberal notice of His Excellency the Commander in Chief of His Majesty’s Forces in India.”

9. I proceed to submit my reasons for this opinion.

10. As the officers of the Honorable Company’s Cavalry and Infantry are, equally with those of His Majesty’s Cavalry and Infantry, practically excluded from holding either *engineer* or *artillery* appointments in India; and as there are no artillery or engineer officers of His Majesty’s service within the territories of the Honorable Company; it was evidently as erroneous as it was unjust, when instituting a comparison between the relative number of staff appointments in the King’s and Company’s services, to include those belonging to *four* branches of the Company’s army, against those held by only *two* of the crown.

11. Any comparison, to be just, should have been limited to the same branches in each service; and as none of the 68 Artillery and Engineer appointments included in the author’s 1st Abstract, could be held, either by the

Cavalry and Infantry officers of the Honorable Company's service, or by the Dragoon and Infantry officers of His Majesty's service, so these Ordnance appointments ought to have been omitted; their inclusion being an act of unfair comparison to the prejudice of the Company's officers.

12. In the abstract of the officers in His Majesty's service, the author appears not only to have omitted all the Colonels of regiments in the total complement of officers granted to corps, although in his abstract of the Honorable Company's officers he includes most of *their* Colonels, and all their Lieutenant Colonel Commandants; but in that, and in the other columns, to have left out all the Pay Masters, as well as all the Quarter Masters of His Majesty's regiments; although no less a number than 72 regimental Quarter Masters, and 10 Division Pay Masters are included, to swell out the total number of *Staff* in the abstract of the *Honorable Company's* officers. This is another act of injustice against the Company's army; for in instituting any comparison between the relative number of staff appointments in the two services, it is plain, that if Quarter Masters or Pay Masters be counted against the one service, they should have been enumerated against the other. Because, however different may be the regimental or army grade of such Quarter Masters or Pay Masters in each service respectively, still the question at issue is not one regarding the particular, regimental or army *rank* which individuals holding such staff appointments possess; but whether there were not in 1822, numerically more *Staff* situations held by *Company's* officers, than, considering the strength of *His Majesty's* forces then in *India*, there ought to have been; and whether there were not too few held by *King's* officers of *all and every* rank.

13. When I add, that all the officers of His Majesty's service holding Staff appointments in Bengal, but whose regiments were either in Europe, or at the other presidencies, appear to have been excluded from the 2nd table, and that both tables are restricted to the Bengal establishment alone, while no less than 10 officers belonging to His Majesty's corps in Bengal, in possession of Staff

or other situations at Madras, Bombay, Ceylon, the West Indies, in Holkar's and the Nizam's service, have been wholly omitted; I have enumerated some of my reasons for considering this author's view of the question before us to be partial, erroneous, prejudiced, and unjust. To these I shall add others as I proceed.

14. With reference to the errors committed by the author, I have, from public documents, prepared the following table, exhibiting the state of the officers in the Cavalry and Infantry branches of His Majesty's and of the Honorable Company's army, at *all* our Indian presidencies, as they stood in 1825, or at the period our author was publishing his erroneous statements in London.

15. In drawing out this table, I have, for reasons above detailed, omitted the European officers in the several *Artillery* and *Engineer* corps in the service of the Honourable Company; although they, equally with His Majesty's officers, are unquestionably entitled not only to fill the Staff situations of their own particular branches of the service, but to a fair and equitable proportion of the Army Staff. I have taken care to distinguish all *regimental* from *other* Army Staff: and these two last, 1st. from officers employed with corps of the Company's service having no complement of officers; 2dly. from those in the military or civil service of native states; and 3dly. from those in civil situations of the Company's service. I have also taken the following as the correct complements of European officers allowed to corps in India, by His Majesty and the Honorable Company respectively.

	Colonels.	Lieut. Colonels.	Majors.	Captains.	Lieutenants.	Cornets or Ensigns.	Regl. Quarter Master.	Regl. Adjutant.	Regl. Paymaster.	Total officers.	Total staff appointments.
His Majesty's Cavalry Corps, ..	1	2	2	9	18	9	1	1	1	43	3
Hon'ble Company's do. do. ..	0	2	1	5	10	5	1	1	0	23	2
His Majesty's Infantry Regiments,...	1	2	2	11	22	11	1	1	1	51	3
Hon'ble Company's Infantry Regts...	0	2	1	5	10	5	1	1	0	23	2

General Abstract of the Number of European Officers of His Majesty's, and of the Honourable Company's Service, belonging to the several Infantry and Cavalry Corps serving at the three Presidencies of Bengal, Madras, and Bombay, in the year 1825; shewing the Complement of His Majesty's and of the Honourable Company's Service respectively, the Number actually present in India, the Number absent, including those on Duty in England, and the Proportion employed (out of those present in India) on the regimental, army, or other Staff, or otherwise withdrawn from Corps.

	Total of officers according to King's establishment, if complete.	Total of officers according to Company's establishment, if complete.	Total of officers present in India.	Total of officers absent from India.	Regimental, not including medical staff.	Employed on army staff.	Employed to officer native corps having no establishment of officers.	Employed in the service of native States.	In the Civil Employ of the Company's service.	Total of officers withdrawn from corps, excluding regimental staff.	Total of officers on staff and other employ, including regimental staff.
22 Corps of His Majesty's Service, ..	1090	506	725	301	65	73	1	10	0	84	149
Officers of His Majesty's Service on the Staff of the Indian Army whose corps were not in India, ..	0	0	0	0	0	10	0	0	0	10	10
Total 22 Corps of His Majesty's Service, ..	1090	506	725	301	65	83	1	10	0	94*	159
80 of the Hon'ble Company's corps of the Bengal Army, ..	4000	1540	1323	180	160	178	161	13	36	391	551
60 " " " Madras Army, ..	2996	1380	1069	212	120	147	33	39	18	237	357
26 " " " Bombay Army, ..	1435	667	543	87	58	75	40	8	34	157	215
Total 169 Corps of the Hon'ble Company's service officered, ..	8431	3887	2935	479	338	400	237	60	88	785	1123

* The following are the names of the 94 Officers alluded to in the above table.

- 1 *General Sir Edward Paget, 28th Foot, Commander in Chief in India.
- 2 *Lieutenant General Sir C. Colville, 94th Foot, Commander in Chief, Bombay.
- 3 *Major General A. Dalzell, 60th Foot, Major General on the Staff.

The corps alluded to in the above Table are as follows.

H. M. Service, 4th, 11th, 13th, and 16th, Dragoons. 1st, 13th, 14th, 20th, 30th, 38th, 41st, 44th, 45th, 46th, 47th, 49th, 54th, 59th, 67th, 69th, 87th, 89th, Foot.

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- 4 *Major General Thomas Reynell, 71st Foot, Major General on the Staff.
 - 5 Major General R. Sewell, 89th Foot, Major General on the Staff.
 - 6 Major General Sir F. Pritzler, 13th ditto ditto ditto.
 - 7 *Major General Sir Lionel Smith, 65th Foot, on the Staff.
 - 8 Brigadier General A. Campbell, 38th Foot, Commanding Forces, Ava.
 - 9 Brigadier General Dunkin, 4th Foot, Brigadier General.
 - 10 Brigadier General W. Morrison, 44th Foot, Brigadier General.
 - 11 Brigadier General McBean, 54th Foot, Brigadier General.
 - 12 Brigadier General McKellar, 1st Foot, Brigadier General.
 - 13 Brigadier F. Newberry, 16th Lancers, Brigadier.
 - 14 Brigadier J. McCombe, 14th Foot, Brigadier.
 - 15 Brigadier M. McCreagh, 13th Foot, Brigadier General.
 - 16 Brigadier Armstrong, 1st Foot, Brigadier.
 - 17 Brigadier General Cotton, 47th Foot, Commanding Madras Division, Ava.
 - 18 Lieutenant Colonel Elrington, 47th Foot, Brigadier.
 - 19 Lieutenant Colonel Mallet, 89th Foot, Brigadier.
 - 20 Lieutenant Colonel W. Smelt, 41st Foot, Brigadier.
 - 21 *Colonel Sir Thomas McMahon, 17th Foot, Adj. General King's Troops.
 - 22 Colonel Sir S. Whittingham, 13th Foot, Qr. Mr. General ditto ditto.
 - 23 Lieutenant Colonel Shawe, 87th Foot, Commanding Troops in Fort William.
 - 24 Colonel T. Hawker, 13th Dragoons, Commanding Bangalore.
 - 25 Colonel T. F. Fitzgerald, 20th Foot, Commanding Poonah.
 - 26 Lieutenant Colonel I. Ogilvie, 20th Foot, Commanding in Malabar.
 - 27 Major Thomas Evans, 38th Foot, Brigadier.
 - 28 Major W. Frith, 28th Foot, Brigadier, Mergui.
 - 29 Lieutenant A. A. Dalzell, 13th Dragoons, A. D. C. to General Dalzell.
 - 30 Lieutenant F. S. Halloran, 44th Foot, A. D. C. to General Dunkin.
 - 31 Lieutenant Hawkins, 44th Foot, A. D. C. to General Morrison.
 - 32 Lieutenant W. B. Scott, 44th Foot, Deputy Assistant Adjutant General.
 - 33 Lieutenant Gray, 44th Foot, Baggage Master.
 - 34 Lieutenant A. Burnet, 54th Foot, Brigade Major.
 - 35 Captain McLaine, 1st Foot A. D. C. to General McKellar.
 - 36 *Captain F. Meade, 88th Foot, A. D. C. to General Reynell.
 - 37 Captain A. Poyntz, 67th Foot, A. D. C.
 - 38 Lieutenant Charles Deane, 67th Foot, A. D. C. and Mily. Secy. Govt. Penang.
 - 39 Lieutenant J. J. Snodgrass, 38th Foot, Mily. Secy. A. D. C. and Post Master, Ava.
 - 40 Lieutenant J. Campbell, 38th Foot, A. D. C. to Major General Campbell.
 - 41 Lieutenant Colonel F. S. Tidy, 14th Foot, Deputy Adjutant General.
 - 42 Lieutenant H. Havelock, 13th Foot, Deputy Assistant Adjutant General.
 - 43 Captain P. Forbes, 47th Foot, Brigade Major.
 - 44 Captain G. Altin, 13th Foot, Brigade Major.
 - 45 Captain H. Waterman, 13th Foot, Deputy Assist. Quarter Master General.
 - 46 Lieutenant C. Grimes, 13th Foot, Deputy Judge Advocate General.
 - 47 Lieutenant F. A. Trant, 38th Foot, Assistant Surveyor.
 - 48 Lieutenant J. Kershawe, 13th Foot, ditto ditto.
 - 49 Lieutenant R. Ware, 38th Foot, Fort Adjutant, Rangoon.
 - 50 Captain Sadlier, 47th Foot, Brigade Major.
 - 51 Captain R. Young, 89th Foot, Brigade Major.
 - 52 Captain Elliot, 21st Dragoons, Assistant Adjutant General King's Troops.
 - 53 *Major Bristow, 34th Foot, Brigade Major King's Troops, Bengal.
 - 54 Lieutenant Hon ble J. Amherst, 59th Foot, Mily. Secy. and A. D. C. Governor General.
 - 55 Captain G. S. Crole, 41st Foot, A. D. C. Governor General.
 - 56 Captain W. Fendall, 4th Dragoons, A. D. C. ditto ditto.

Bengal Army, from 1st to 10th Regiment Native Cavalry; 1st and 2d European Regiment, from 1st to 69th Regiment of N. I. (N. B. no 47th.)

Madras Army, from 1st to 8th N. C. 1st and 2d European Regts. from 1st to 50th Regt. of N. I.

Bombay Army, from 1st to 3d N. C. 1st and 2d European Régts. from 1st to 24th do. of N. I.

N. B. There are 69 other corps of Cavalry and Infantry in the Hon. Company's Service, without any complement of officers, viz.

Body Guards, Extra, Local, Marine, Rifle, Irregular, Pioneer, Provincial, and Veteran Corps and Battalions, to officer which, 237 officers appear to be taken from corps of the line.

57 Captain F. Champagne, 20th Foot, Military Secretary Commander in Chief, Bengal.

58 Captain T. Macan, 16th Lancers, Persian Interpreter Commander in Chief, do.

59 Captain M. Semple, 38th Foot, A. D. C. Commander in Chief, ditto.

60 Lieutenant C. A. Wrottesly, 16th Lancers, ditto ditto ditto.

61 Captain K. Burrowes, 41st Foot, Extra ditto ditto ditto.

62 Lieutenant G. F. Finucane, 14th Foot, attached to Gun Boats, Ava.

63 Lieutenant-Colonel R. Torreus, 38th Foot, Deputy Adjutant King's Troops, Madras.

64 * Lieutenant-Colonel Forrest, Deputy Quarter Master General ditto, Madras.

65 Captain J. Kitson, 44th Foot, Brigade Major, Madras.

66 Major C. J. Barrow, 59th Foot, Deputy Judge Advocate General, ditto.

67 Captain A. McLeane, 13th Dragoons, A. D. C. Governor, Madras.

68 Major G. Wetherall, 1st Foot, Military Secretary C. in C., Madras.

69 Lieutenant C. S. Naylor, 89th Foot, A. D. C. to General Sewell.

70 Captain Wetherall, 11th Dragoons, A. D. C. to General Pritzler.

71 Captain W. B. Barnard, 1st Foot, Pay-master, Poonamallee.

72 Lieutenant W. Campbell, 46th Foot, Fort Adjutant, Poonamallee.

73 Captain J. H. Edwards, 46th Foot, Commandant, Poonamallee.

74 Captain E. Jones, 89th Foot, A. D. C. to General Pritzler.

75 Lieutenant-Colonel T. Hunter Blair, 87th Foot, Military Secretary Commander in Chief, Bombay.

76 Captain Burrowes, 20th Foot, A. D. C. Governor, Bombay.

77 Lieutenant R. Gillespie, 4th Dragoons, A. D. C. Governor, Bombay.

78 * Major James Jackson, 6th Dragoons, A. D. C. Commander-in-Chief, Bombay.

79 Captain W. Havelock, 4th ditto, ditto, ditto.

80 Captain G. Moore, 4th ditto, Brigade Major King's Troops, Bombay.

81 Lieutenant W. Smith, 47th Foot, A. D. C. General Smith.

82 Captain Clark, 47th Foot, Commanding Depot, Bombay.

83 Captain Sir J. Gordon, 13th Dragoons, Nizam's Service.

84 Captain F. Grove, 13th Dragoons, Commanding Escort, Mysore.

85 Lieutenant J. F. Kelso, 13th ditto, Nizam's Service.

86 Lieutenant Thomas Kennedy, 67th Foot, Nizam's Service.

87 Lieutenant C. Arrow, 89th Foot, ditto ditto.

88 Paymaster C. F. Grant, 1st Foot, ditto ditto.

89 Lieutenant Gilbert J. Pasley, 14th Foot, Holkar's Horse.

90 Captain O. W. Gray, 30th Foot, Travancore State Employ.

91 Captain M. Young, 30th Foot, Nizam's Service.

92 Lieutenant C. K. McLeod, 30th Foot, Nagpoor Service.

93 Lieutenant B. Barlow, 30th Foot, ditto ditto.

94 Lieutenant-Colonel C. Grant, 54th Foot, Commanding a Brigade.

* Those marked * belong to corps not in India.

16. Taking the total number of officers, present and absent, posted to corps, as given in 3d and 4th columns of my table, and comparing these with the two different complements in the 1st and 2d columns, the twenty-two Regiments of His Majesty's service then in India will be found to have wanted only 64 officers of their proper complement, while they had 520 officers surplus to the East India Company's complement, and the immense proportion of nearly $\frac{3}{10}$ ths of their existing establishment absent in Europe.

17. But while the 22 regiments of His Majesty's service in India were kept so complete as to have 29 European officers, on an average, actually present with each corps, (a complement more than sufficient to enable them to officer, at the common average strength, 49 regiments of the Company's service,) there were 69 Infantry and Cavalry corps of Fencibles or Militia in India, belonging to the Honourable Company, not one of which possessed even a single European officer on its fixed establishment ! and even their officered corps of the Cavalry and Infantry branches alone, wanted no less than 5017 officers of his Majesty's complement, and were 473 officers deficient of their own. Moreover, although only the small portion of $\frac{1}{7}$ th of the existing establishment of the European officers of the Honourable Company's corps were absent from India, there were not, on an average, 13 European officers, *including sick*, present with each regiment ; and I beg here to remark, that this did not arise from the number in each corps employed on the Staff, *but from the very small complement of officers allowed to corps*, and from even that, not being complete.

18. Again, in His Majesty's service, each regiment had three regimental Staff, viz. the Adjutant, the Quartermaster, and the Pay-master ; while in the Company's service, there was no distinct regimental Pay-master to any one of their 138 Infantry and Cavalry corps, and only two regimental Staff, viz. the Adjutant, and the Interpreter and Quartermaster in one person, to each corps of the line.

19. It is true that in His Majesty's service the regimental Quarter-master is generally a warrant officer, and that the commission of the regimental Pay-master is held by a distinct or supernumerary officer; *but in India this is not always the case*; nor does it at all diminish the superior numerical strength of *Staff* allowed to His Majesty's regiments; or shew any thing beyond a more striking view of the efficient complement of European officers in His Majesty's service, contrasted with the extreme poverty of the Honourable Company's, which possessing no warrant or supernumerary officers for the duties of regimental Quarter-master, or regimental Pay-master, is forced to do without the last altogether; while the united office of Interpreter and Quarter-master is thrown on one, and that of the Adjutant on another, of its Commissioned officers. His Majesty's adoption of this *plurality* arrangement, with a reduction in the complement of His officers to one half, i. e. to the Honourable Company's establishment, are measures which, I must observe, would go far to meet our "King's Officer's" wishes; by the "*substantial*" advantage of assimilating the King's more to the Company's service, "enabling" a King's, as well as a Company's "Lieutenant to hold a Company, and to discharge the duty of a Captain, to the certain advantage of the Lieutenant, so situated; nay," a "King's" Lieutenant "might then," as well as those of the Honourable Company's service, "have charge of two and even three companies at the same time, and be obliged to receive the allowance for each; and many" a King's, as well as "a Sipahceh Captain," might then be found in command of a battalion, discharging the duties of a field officer, and be thereby subjected to the severe hardship of receiving an extra *sum per mensem*," though the injury of such a change in the royal service, both to individuals and to the state, would be felt, as in the Company's corps, to be as injurious, as it would prove detrimental to the efficiency, order, and discipline of corps; to the *promotion* of the half complement of officers retained, and to the *purse* of the other placed on half pay.

20. I shall not here stop to discuss, whether a third regimental Staff or Pay-master be necessary for the Company's regiments, or a fourth or Interpreter for those of the King, although I think, with the author, that *European* regiments require Interpreters much more than *Native* corps. I shall merely remark, that the power to modify the number and nature of Staff appointments, and the complement of officers in the several regiments of each of the two services, rests with his Majesty and the Honourable Company respectively; and if the officers holding *regimental* Staff appointments, or the charge of corps and companies in the *King's*, possess different rank from those entrusted with these charges in the *Company's* service, the difference, however it may mistakenly have appeared to the author to affect the individual interests of His Majesty's commissioned officers, by preventing an accumulation of conflicting appointments, of distinct offices, and of separate emoluments, such as (from the extreme paucity of officers) necessarily exists in the Company's service, should never be attributed (as it unjustly has been by him) to the East India Company. Nor, on the other hand, should the small and inadequate complement of European officers, granted by the Honourable Company to the several corps of their service (to the great comparative detriment of the promotion of their officers, *stagnated as that is by a system of strict seniority rise**) be permitted to be turned still more to their disadvantage, by the proper authorities ever coinciding with this "King's officer," and allowing the double complement of officers in His Majesty's corps, to give each King's regiment such a claim to the Indian army Staff, as to be double that of each corps in the Company's service, merely because the regimental complement of officers in the service of the Crown (which has conferred superior promotion upon His Majesty's officers*) happens, (vide par. 14) to be double that of the Honourable Company.

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- * The 3d Officer in a King's regiment is a Lieutenant Colonel.
 - The 3d ditto in a Company's regiment is a Major.
 - The 5th Officer in a King's regiment is a Major.
 - The 5th Officer in a Company's regiment is 2d Captain.
 - The 16th Officer in the King's regiment is a Captain.
 - The 16th Officer in a Company's regiment is 8th Lieutenant.

21. Having shewn that in each regiment of His Majesty's service the complement of officers is nearly double that in the East India Company's, and that there are *three* regimental Staff appointments in King's regiments, and only *two* in those of the Honourable Company; I next proceed to remark, that in the year 1825, there were on an average *six* officers on the strength of each of His Majesty's regiments in India, holding a rank superior to that of Captain, while there were only *three* officers on the strength of each of the Company's corps holding such rank; and further, that there were (vide my table) nearly 4 King's officers for each corps of His Majesty's service in India employed "on the Staff of the Indian Army," while there were not $2\frac{1}{3}$ from each corps in the Company's service. These are facts, Mr. Editor, which not only prove that the officers of His Majesty's regiments were not excluded from either Staff or command, but which decidedly prove that they had a much larger share of both than that to which they were entitled.

22. Before proceeding further into this part of my subject, I must here notice the absurdity of a maxim, upon which the author seems to have grounded almost all of his arguments regarding the fancied exclusion of King's officers from the Indian Army Staff. It is in substance this, that the *officers* present with the Cavalry and Infantry divisions of His Majesty's forces in India (which in 1825, amounted to 725) had a claim to such a number of Staff situations in the Indian army as were proportionate to the ratio which *their* number (725) bore to that of all the Company's officers present with that army (which in the Cavalry and Infantry branches of the service, was at the period in question, 2935,) supposing always such a number of King's officers, duly qualified for the Indian Staff.

23. According to this doctrine, there being 3660 officers of Cavalry and Infantry present with those branches of the army in India in 1825, and 483 Staff appointments usually filled up from the line, His Majesty's 725 officers were entitled to 93, instead of to the 83, mentioned in my table.

24. But it is evident, that the number of Staff officers in *any* army, must always depend upon the number of forts, garrisons, cantonments, brigades, divisions, circles, and other fractional parts, into which its several branches are respectively broken, and these again upon the nature and extent of the country and its frontier, upon the nature of the service, upon a state of peace or war, and upon the number and nature of the regiments and corps composing the several branches of the army; but *never* (as insisted by the author) upon the numerical strength of *officers* present with any particular branch or division of that army, whether such division be of Cavalry or Infantry, European or Native, and whether these officers be of the King's or Company's service.

25. Let us apply this rule to the service in India during the year 1825, when our author's pamphlet was circulating in London.

26. The Cavalry and Infantry branches of the army in India were then composed of 191 regularly officered corps of the line, 22 of these being of His Majesty's service, occupying only 14 different stations, and 169 of the Honourable Company's corps, scattered over an immense tract of territory, and occupying 107 other different stations of the army. These stations were so situated, and the force so disposed, that 483 Staff officers were required from the line, including personal Staff, the Staff of forts, garrisons, brigades, divisions, circles, and of separate chief commands.

	<i>Corps.</i>	<i>Staff.</i>	<i>King's corps.</i>	<i>Staff.</i>
Then, if	191 :	483 :	22 :	should have obd. only 56
			<i>Compy's corps.</i>	
Again, if	191 :	483 :	169 :	should have obd. 427
	<i>Stations.</i>		<i>King's station.</i>	
Or, if	121 :	483 :	14 :	..... 56 nearly.
			<i>Compy's station.</i>	
Or again, if	121 :	483 :	107 :	..... 427 nearly

But in 1825, there were 83 King's officers on the Indian Staff, and only 400 of the Company's service. "A King's Officer," therefore, placed himself and brethren of the royal service, rather in a "false position," by asserting "the exclusion of His Majesty's officers from the Staff of the Indian army," when instead of only 56, so large a

proportion as 83 officers, out of 22 corps, at 14 stations of the army, were at that moment so employed.

26. But on examining my table, it will appear, that in the year 1825, there were *more* than 169 corps of the line in the Honourable Company's service. The actual number (even exclusive of Artillery or Engineers) being 238 ; there being 69 Cavalry and Infantry corps, constantly liable to join the line, viz. the Body Guards of Governors, extra, local, marine, rifle, regular, pioneer and provincial corps and battalions, &c. &c. the officers of all of which, with those of the Engineers and Artillery, have, to the prejudice of the Company's service, been omitted in the above comparisons. A more just proportion would, therefore, (still excluding the Artillery and Engineers,) be as follows :—

	<i>Company's corps.</i>		<i>King's corps.</i>	<i>give Staff, then</i>	<i>King's corps.</i>	<i>Should have Staff.</i>
If	238	+	22	483 ::	22	: 41 nearly.
If	238	+	<i>King's.</i> 22	<i>Staff.</i> 483 ::	<i>Company's.</i> 238	: 442

which would reduce the complement of His Majesty's officers on the Indian Staff from 83 to only 41, and increase that of the Honourable Company from 400 to 442.

27. But if excluded from officering *corps composed entirely of natives in the service of the Honourable Company*, if excluded from filling *situations of a strictly civil nature in the Company's service*, or from occupying others, *whether civil or military, in the service of native states*, such as are referred to in the 7th, 8th, and 9th columns of my table, His Majesty's officers surely ought not to complain.

28. Yet the local and native Governments of India, possessing the exclusive patronage of these situations, have opened even many of them to King's officers. Indeed the table above given not only shews that His Majesty's officers were not debarred from the service of the native states, but that almost one officer in every second corps was on an average so employed, being a much higher average than existed even in the Company's service.

29. Again, although the East India Company, by granting so very small a complement of European officers to

their regular corps, as is exhibited in my table, and by not giving European officers at all to more than three times the number of corps His Majesty's service supplies to India, may be shewn most seriously to affect the promotion of their own officers; yet I cannot perceive how any one of His Majesty's officers, on the mere strength of the transfer of his regiment to the King's Indian establishment, can possess a "*claim*" to withdraw, however temporarily, from his own immediate service, and to demand either as a matter of justice, of equity, or of right, to enter the service of the Honourable Company, or into that of any of the native Indian states.

30. Instances are not, however, wanting of His Majesty's officers being so employed; for even at the very moment the author before me was erroneously proclaiming their "exclusion," I find Major General Sir Archibald Campbell, then a Lieutenant Colonel of His Majesty's 38th Foot, not only commander of the British forces within the Burmese territories, but at the head of the civil and political commission of the Honourable East India Company's Government in Ava; Captain Havelock, of His Majesty's 4th Light Dragoons, in command of a *Ressala* of the Honourable Company's Irregular Horse; Brevet Major and Captain Bunce, of His Majesty's 67th Regiment of Foot, commanding the Honourable Company's corps of Agra Nujcebs; and Major Gardner, of His Majesty's half pay list, in command of the Honourable Company's corps of Rohillah Horse. Nay, this last officer, though *retired on half pay*, has claimed, and I believe has been allowed actively to exercise, the authority granted by His Majesty's commission as Major, and now commands every officer in the Company's army, under the rank of Lieutenant Colonel*.

31. What I have stated will I think convince every unprejudiced person, not only that His Majesty's officers were not in 1825 "excluded" "from the Indian Staff," but that they enjoyed a large portion of it, larger indeed

* Vide the case of Colonel Bradley versus Arthur, discussed in the House of Commons 11th May 1826, for some remarks regarding officers on half pay exercising commands.

than that to which the strength, or even the importance of their branches of the service, great as that is, could entitle them*. True, they must generally, though not always, be excluded from the Honourable Company's service, to which it may be doubted if they have more claim, than when in the peninsula of Europe, to that of their Majesties of Portugal, of Spain, or of the Netherlands. But it is not the East India Company, or their local governments, who prevent their being so employed. It is circumstances peculiar to the constitution of the royal service, opposed as these are to that of the Honourable Company. It is the awkward necessity under which the local governments of India are placed, of being obliged to solicit and to obtain the previous permission of the Commander in Chief of His Majesty's forces to any appointment of a King's officer. It is the incongruity of employing in the Company's service, officers, not holding any commission from their local governments, whose regiments are constantly removed from one Indian Presidency, or Government, to another ; and who are con-

* A detail of the Staff in the Cavalry and Infantry branches of the army as-
sembled at Bhurtpoor, may prove a further elucidation of the fact here insisted
upon.

At Bhurtpoor, there were assembled :

Of His Majesty's troops, 2 Regiments of Cavalry.

Of the Honourable Company's, 6 Regiments of Cavalry.

Of His Majesty's troops, 2 Regiments of Infantry.

Of the Honourable Company's troops, 17 Regiments of Infantry.

Total, 4 Regiments of His Majesty's service.

Total, 23 Regiments of Honourable Company's service.

Staff to the above.

		<i>King's. Comp's.</i>	
Majors General, Commanding Divisions,	..	2	0
Brigadier Generals, Commanding Divisions,	..	1	0
Brigadiers, Generals, Commanding Brigades,	..	2	1
Brigadiers, Commanding Brigades, ..	..	3	2
Total exercising Commands,		8	3
Assistant Adjutant Generals, ..	..	1	2
Deputy Assistant Quarter Master Generals,	..	0	3
Majors of Brigade, ..	..	4	4
Aides de Camp, ..	..	4	1

Total Staff for Cavalry and Infantry, .. 17 15

Here the superior rank of His Majesty's officers, in only 4 corps, occasioned their obtaining 8 out of the 11 Infantry and Cavalry commands, although there were 23 Company's regiments present; and instances were not I believe wanting, where a King's officer, only a few months in India, commanded an Infantry brigade, composed entirely of natives.

stantly liable (almost at their own individual pleasure) to withdraw, by exchange or purchase, from India to Europe, and consequently from their service. It is the necessarily limited knowledge existing among the civil and military authorities in the Company's employ, regarding the particular conduct, character, and qualifications of individual officers in His Majesty's regiments, owing to the constant changes and removals to Europe, and the short residence in India of most of the *officers* of those corps*. It is the superior injury which European regiments suffer (when compared to that to which native regiments, with a proportion of native officers, are liable,) when many European officers are taken away for Staff or other employ†; and it is the objections made by commanding officers of corps, against individuals they do not patronize being thus employed. It is these, and a number of other circumstances incident to the *distinct* and *peculiar* constitution of the two services, that necessarily exclude His Majesty's officers, while in the full or half pay of the crown, from being generally employed by the local governments of India, whether European or Native. But to assume that the officers of His Majesty's corps in India have ever been unfairly excluded from an equitable share of the "*Indian Army Staff*," is to prefer an accusation which I contend is unfounded in fact, against those high minded officers of His Majesty's

* In a work published in London, entitled, "Observations on the Army, by an Officer," is the following passage:—"Under the existing system, a regiment, during its tour of duty in Asia, buries two or three thousand men, and its full complement of officers twice over." This, in addition to the many exchanges which take place from bad health, occasions constant change of officers in His Majesty's Indian regiments.

† I have been given to understand, that during the year 1821, the Marquess of Hastings, then Governor General and Commander in Chief, having, in consequence of a deficiency of *Company's* officers, borrowed several from His Majesty's regiments in India, to assist in disciplining the troops of the native powers in alliance with the British Government; His Royal Highness the Duke of York, apparently alarmed at a measure, which to His Royal Highness appeared likely to affect the discipline of His Majesty's Indian regiments, immediately directed those officers to be restored to their corps; and applied to the Court of Directors, proposing to grant officers from His Majesty's half pay list, for the service of the native states. This the Court would not allow, it being in direct opposition to their established policy, to permit European officers, independent of the East India Company, to remain attached to the courts or armies of native potentates.

service, who have in this country successively filled the elevated stations of Governor General, and Commander in Chief.

32. The following comparative statement of officers in the King's and Company's service, *now* employed on the Army Staff of our three Indian Presidencies, may more clearly elucidate what I have stated.

33. In preparing this statement, it will be observed, that, with reference to my previous remarks, I have omitted all situations to which officers of the line are not now generally eligible, viz. the ordnance, the engineer, and the building appointments; in addition to which I have excluded all strictly *civil* situations, and all appointments in the service of *native* states; restricting myself solely to the "*army staff*" *usually so called*; although the 183 appointments under the head of "Commissariat, Pay," and "Audit," "Judge Advocate, Surveyor General, Stud," and "Clothing," appertain rather to the civil branches of the East India Company's military administration, than to the "Staff of the Indian army," *properly so called*.

	<i>Comp's. King's.</i>	
34. Commanders in Chief,	0 3
Lieutenant Generals, commanding garrisons,	2 0
Major Generals on the Staff of the army,	7 7
Officers of inferior rank, including Brigadiers commanding divisions, officers commanding cantonments, garrisons, and stations of the army, or exercising separate commands, of one or more regiments or battalions,	41 11
<hr/>		
Total, exclusive of Commanders in Chief, holding commands,	50 18
Adjutants General,	3 1
Deputy Ditto,	3 2
Assistant Adjutants General,	10 0
Deputy Assistant Adjutants General,	15 0
Brigade Majors,	30 3
Town Majors,	4 0
Fort Adjutants,	19 0
Quarter Masters General,	3 1
Deputy Quarter Masters General,	3 1
Ditto Assistant Quarter Masters General,	19 0
Army Commissariat,	79 0

	<i>Comp's. King's.</i>	
Audit and Pay Department, ..	.. 45	0
Judge Advocate General's Department, ..	.. 21	1
Surveyor General's ditto, .. ..	.. 20	0
Stud Department, .. ..	.. 11	0
A. D. C. to Governors and Commanders in Chief, ..	.. 11	12
A. D. C. to Major Generals, ..	.. 7	6
Military and private Secretaries to Governors, Vice- Presidents, and Commanders in Chief, ..	.. 1	9
Persian Interpreters to Commanders in Chief, ..	.. 1	1
Persian Interpreters to divisions of the army, ..	.. 2	0
Clothing Department, ..	.. 7	0
Military Board Staff, ..	.. 8	0
Superintendents of Cadets, .. ..	.. 3	0
Commanding Depots, ..	.. 0	3
Pay Masters of Depots, .. ..	.. 0	3
Adjutant and Quarter Masters of Depots, ..	.. 0	3
<hr/>		
Total, ..	375	68

Many of the appointments in the *Company's* service here noticed, it must be evident, could not be generally conferred by the local governments on *His Majesty's* officers, who by exchange or purchase in England, might at any time suddenly effect their removal from the country, contrary to the wishes of the local government employing them. While others in *His Majesty's* service are equally inapplicable to *Company's* officers; for, generally speaking, one of the latter would be as much out of place as Adjutant General to the King's troops in India, as one of the former would, if appointed Secretary to any of the Indian Army Military Boards, Superintendent of the *Company's* Stud, or to any other situation, such as the Commissariat, requiring a thorough knowledge of the natives, their character, language, habits, and customs. Individuals in both services, qualified for any situation, may no doubt be occasionally met with; but the qualifications of a few cannot be permitted to influence the general usages and customs of either service. Exceptions in favour of *King's* officers employed in the *Company's* service have been distinctly given in the 30th paragraph of this letter. The very author of the pamphlet now before me, has, I believe more than once, been employed in the law

branch of our military administration; but although we have seen many of His Majesty's officers when in India employed both in the civil and military departments of the Company's service, I fear it will be long before we see Company's officers employed either in the civil or military service of the Crown. If a bar, Mr. Editor, has always existed to the latter, why, I ask, should not a bar be placed on the former? and if the one be not removed, why should the other?

35. The regularly officered corps in the Company's service having been increased since the year 1825, are at the present moment ten times more numerous than those of His Majesty's forces in India; and including native corps *not officered*, the Company's army outnumbered that of His Majesty in India, in the proportion of 12 to 1. If the officers in the army of the Crown were therefore limited to one eleventh, or to one twelfth of the Indian Army Staff, they could have no just reasons to complain; but when a proportion of nearly one sixth of the Army Staff appointments is at this moment actually held by them, (as shewn in par. 34,) and when it is considered, that while occupying nearly one third of all the principal army commands, and much the largest portion of the Staff of the Governors and Commanders in Chief of our three Indian presidencies, they further enjoy not only all the chief commands, but are exclusively possessed of the patronage of the Company's three Indian armies, it is really too absurd to find their positive exclusion from the Staff of the Indian army, not only loudly insisted on in the pamphlet I have noticed, but proclaimed with all the bitterness of party spirit, by a writer in the Monthly Magazine. The following is an extract from the magazine I allude to.

The bulk of the Company's army consists of the material of the country, officered solely by their own servants. Wonderfully faithful have been these Indian troops; but still occasions are liable to arise that must shake both their fidelity and the confidence of their masters. A natural leaning to the native princes may be supposed still to lurk among them: and any hour almost may tempt them suddenly to desert their colours, or turn them against their employers. To provide against these perilous events, a portion of the King's troops are lent them—British troops, both officers and men. On these a perfect

reliance may be placed; these may, at any time, be armed against the restive sepoys, as recently we have seen them.

These troops, these prætorian bands, it will of course be supposed, are munificently dealt with. On them all the security—if security there can be—of the Company's dominion depends. No gratification, in their power to bestow, is of course withheld. They are nobly remunerated; and all offices of trust, or peculiar delicacy, or even of superior emolument, are of course distributed among them. If any actual competition of interests could be supposed to arise between the Company's and King's officer, favour would of course lean to the latter. Will the English world, who know so little of foreign proceedings, will they believe that the very reverse is the fact? The very reverse, however, is the fact. The officer of the line, who at home looks down with contempt upon the domestic and constitutional forces of his country, as soon as he arrives in India, must in his turn succumb to the supremacy of the Company's officer. He is at once of an inferior order. The truth is, the Company regard the King's troops with jealousy, and instinctively so. They would gladly have nothing to do with them, but their presence and protection are indispensable; and there is too little of the spirit of magnanimity about them to make a virtue of necessity, and treat them with liberality. Though depressing their own officer, though resolving to keep him in subjection, and casting all advantages into the civil scale, towards the King's officer they shew besides a grudging and a tyrannous disposition. The monopoly of Leadenhall Street appears at every turn. The Company have not the disposal of the King's commissions, and they will patronize none but their own *protégés*.

36. In page 8th of the pamphlet I have referred to, the author has pointed out an error Lieutenant White had committed, by supposing that the Indian services of His Majesty's officers had, like their exertions in Europe, America, Africa, and other parts of Asia, been occasionally rewarded with brevet promotion. But he has himself fallen into one of equal importance, when contrasting the situation of the Company's officer with that of the King's, in depicting the former as embarking for India, "certain before hand, that he cannot be superseded in any way."

37. A perusal of the 4th article of your 8th Number, Mr. Editor, published in March last, which exhibits the results of the restriction placed in the fatal year 1806, against the promotion of the Honourable Company's officers, to the higher army grades, will I believe convince this, or any other King's officer, that we are before-

hand, too certain to be superseded, in every grade, by many of those in the service of the crown.

38. No one can desire more than I do, Sir, to see the restriction then placed (*on the special memorial of His Majesty's Lieutenant Colonels in India*) against the Company's army withdrawn; and I believe the whole Company's service would rejoice to see the restriction against brevet promotion for distinguished East India services, in the King's army, also rescinded. No Company's officer can wish to see those of His Majesty deprived, by their mere conjunction with the Company's army in India, of those rewards for distinguished exertions, which they enjoy in every other quarter of the globe. What Company's officer would not have been happy to have seen the gallant Major Sale, and other distinguished individuals in His Majesty's service, lately employed in Ava, promoted by brevet for distinguished services, instead of rising to the superior ranks, by the common casualties of service?

39. It seems indeed highly desirable that such restrictions should be withdrawn, and that *our* service, should no longer be a bar to the promotion of His Majesty's officers*, while the claims of the King's officers in India should no longer debar the officers at the head of our regiments from obtaining the full rank of Colonel, *as is the rule and practice in all the seniority corps of His Majesty's service*. It is only a few days ago since every Major in the Company's army saw a Captain in His Majesty's service in India, promoted, without ever being a Major, to a Lieutenant Colonelcy, over their heads; and if the claims of all the Majors in the Company's service had no effect to prevent this act of supercession, what is there, I ask, so peculiar in the claims of the *few Lieutenant*

* Our correspondent will perceive, by a brevet issued from the War Office on the 10th July 1826, that several officers of His Majesty's service engaged at Bhurtpoor have been promoted one grade, viz. Majors Fuller, 59th, Everard, 14th, Bishopp, 14th, to be Lieutenant Colonels; and Captain Meade, 88th, to be Major in the army. Thus the bar which has so long prevented the promotion of His Majesty's officers for distinguished service in India, has been removed. We trust this is only a prelude to the removal of the restriction, yet in force, against the promotion of the officers at the head of regiments in the Honourable Company's service, to the rank of Colonel.—EDITOR.

Colonels of His Majesty's army in India (of which the young and gallant officer alluded to is now one) that should prevent the promotion of our oldest officers to the rank of Colonel, when after from 35 to 46 long years of service, they have, like their contemporaries, now General officers in the King's service, gained the summit of their corps?

40. In page 32 of his pamphlet, the author remarks, that—

Owing to accidental vacancies, not only the whole of the eight divisions and districts of the Bengal army were then, 1822, commanded by Company's Generals alone, to the total exclusion of King's officers, but that there were no less than eight other special commands, called "advanced or frontier corps," held by Company's field officers, with, I believe, the allowances, if not the rank of Brigadier, entirely independent of the corps to which they belonged, half of whom were junior to, and none senior to four out of the seven field officers then commanding, and, from the nature of circumstances, *restricted to the command* of their own regiments only. But this part of the argument will be best understood, by referring to the following list of the commands alluded to, contrasted with one shewing the situation of the Commandants of King's regiments.

List of Special Commands on the Bengal Establishment, held by Officers of the Company's Service in 1822, independent of their Corps; with the Name and Rank of the Officer commanding.

Post or Command.	Name, Rank, and Corps.	Corps where stationed.
Nagpoor subsidiary force.	Colonel Adams, C. B. 1819, 17th N. I.	Loodhiana.
Bengal troops in Malwa.	Lieut. Colonel Fagan, 1815, 24th N. I.	Muthra, Almorah, and Moradabad.
Bengal troops in Neemuch.	Lieut. Colonel Lumley, 1816, 28th N. I.	Mow (in Malwa) and Delhi.
Troops in Rajpootana.	Colonel Knox, 1812, 2d Nat. Inf.	Keitah in Bundelkund.
Do. Agra & Muthra.	Colonel Shuldham, 1814, 25th N. I.	Rajpootana & Neemuch.
Do. Rohilkund.	Colonel Vaurenen, 1819, 25th N. I.	Do. Do.
Do. Oude.	Colonel Price, 1819, 18th Nat. Inf.	Rajpootana & Saugur.
Do. Cuttack.	Lieut. Colonel Carpenter, 1811, 16th N. I.	Nagpoor & Asseerghur.

List of the Commanding Officers of the seven Regiments of his Majesty's Service on the Bengal Establishment in 1822 ; shewing the Name and Rank of each, and the Station where quartered.

Corps.	Commanding Officers, and Rank.	Where quartered.	Station commanded by
8 Lt. Drags.	Col. Westenra, 1819.	Cawnpoor,	Maj. Gen. Martin-dell.
11 Do.	Col. Sleigh, Do.	Meerut,	M. Gen. Gregory.
14 Foot	Col. M'Combe, Do.	Do.	Ditto.
17 Do.	Col. Edwards, Do.	Burhampoor	Col Edwards.
24 Do.	Lt. Col. Robison, 1816	Nagpooor,	Col. Adams.
59 Do.	Lt. Col. M'Gregor, 1812	Dinapoor,	Maj. Gen. Toone.
87 Do.	Lt. Col. Millar, Do.	Fort William	— Thomas.

41. But the author has committed a serious mistake, in supposing that half of the eight Company's officers in his first list, were "junior, and none senior, to four out of the seven" King's officers in his last ; for if my information be as accurate as it is public, the following is a correct statement of the lengths of service of the several officers named, viz.

East India Company's Service.

	Entered the Service in	And in 1822 had served
Major General Martindell, ..	1772,	50 yrs.
Major General Toone,	1778,	44 do.
Major General Loveday,	1778,	44 do.
Major General Thomas,	1778,	44 do.
Colonel Price,	1779,	43 do.
Colonel Adams,	1780,	42 do.
Colonel Knox,	1780,	42 do.
Colonel Shouldham,	1780,	42 do.
Colonel Vanrenan,	1781,	41 do.
Lieutenant Colonel Carpenter, .	1781,	41 do.
Lieutenant Colonel Fagan,	1794,	28 do.
Lieutenant Colonel Lumley, ..	1794,	28 do.

His Majesty's Service.

Colonel Edwards,	1783,	39 yrs.
* Colonel McCombe,	1793,	29 do.
Colonel Westenra,	1794,	28 do.

* Robert Hetzler, now a Lieutenant Colonel of 1818, in the Company's Bengal Artillery, was on service at Ceylon in 1793, and had been ten years an officer, when Colonel M'Combe, now the senior Colonel of His Majesty's service in Bengal, entered the army as an Ensign.

Lieutenant Colonel McGregor, .	1794,	28 do.
Lieutenant Colonel Miller,	1794,	28 do.
Colonel Sleigh,	1795,	27 do.
Lieutenant Colonel Robison, . . .	1795,	27 do.

42. This statement requires little comment. I shall only in elucidation of the too certain supercession experienced by officers in the service of the Honourable Company, remark, that the last promoted Colonel of the Company's service above mentioned, would appear in 1822, to have served full 41, while the youngest of the King's had served only 27 years ; and that while Colonel Edwards, a King's officer of 39 years service, exercised the separate command of the station at Berhampoor, I see no hardship in Lieutenant Colonels, or even Colonels of His Majesty's service, of only from 29 to 27 years standing (the usual period after which in our service officers may hope to be Majors) being commanded, while cantoned at our large European stations of Cawnpoor, Meerut, Nagpoor, Dinapoor, and Fort William, by officers of the Honourable Company's service, their seniors as well *in rank* as in service, not one of them having served less than 42 years, and all *except one* having risen to the rank of Major General.

43. I shall conclude this prolix letter with the following table, shewing the number and rank of the various officers now attached to the several branches of His Majesty's, and of the Honourable Company's forces in India.

I remain, Mr. Editor,

Your obedient Servant,

AN OLD CAPT. & CONTRIBUTOR.

	No of Corps.	Ge n. officers	Cols.	Lt. Cols.	Majrs.	Capts.	Lts.	2d Lts. Cornets & Ensus.	Total.
Officers in His Majesty's Corps of Cavalry and Infantry in India, ..	23	30	13	50	59	229	437	162	980
Officers in India of His Majesty's service whose Corps are not in India, ..	0	6	0	4	1	3	0	0	14
Officers in Hon'ble Company's Infantry, Bengal, ..	76	19	5	128	76	380	760	189	1557
Do. " Madras Do. ..	54	23	5	80	54	270	540	162	1134
Do. " Bombay Do. ..	24	5	2	41	24	120	240	72	504
Total Hon'ble Company's Infantry, ..	154	47	12	249	154	770	1540	223	3195
Officers in the Hon'ble Company's Cavalry, Bengal, ..	10	2	1	17	10	50	100	21	191
" " Madras, ..	8	3	1	12	8	40	80	19	163
" " Bombay, ..	3	0	0	6	3	15	30	10	64
Total Hon'ble Company's Cavalry, ..	21	5	2	35	21	105	210	50	418
Total Honourable Company's regular Cavalry and Infantry, ..	175	52	14	284	175	875	1750	273	3618
" Fencibles, Militia, and Corps not officered, ..	62	0	0	0	0	0	0	0	0
Officers in the Honourable Company's Artillery, Bengal, ..	9	1	0	17	9	45	90	43	205
" " Madras, ..	6	4	1	7	6	30	60	8	116
" " Bombay, ..	3	1	0	6	3	20	36	2	68
Total Honourable Company's Artillery, ..	18	6	1	30	18	95	186	53	389
Officers in the Honourable Company's Engineers, Bengal, ..	2	0	0	4	2	11	20	4	41
" " Madras, ..	2	0	1	3	1	10	7	0	22
" " Bombay, ..	2	0	0	4	1	10	10	0	25
Total Hon'ble Company's Engineers, ..	6	0	1	11	4	31	37	4	88
Total Hon'ble Company's Engineers and Artillery, ..	24	6	2	41	22	126	223	57	477
Total Hon'ble Company's Army in India, ..	237	58	16	325	197	1001	1973	330	4095
Total King's Army in India, ..	23	36	13	54	60	232	437	162	994
Average of 23 corps of the Hon'ble Company's army, or of as many corps in the Company's army as there are corps of His Majesty's service in India, {	23	6	1	37	22	115	227	37	468
Difference, shewing that H. M. forces in India have a greater complement of European officers, than an equal force in the Company's service, by }	0	30	12	17	38	117	210	125	549

The following Extracts from Letters from Correspondents in the Asiatic Journal for May, and the Oriental Herald for March and April, 1826, which touch on subjects noticed in the preceding communication, are annexed for the information of our readers.

In the Court of Directors' General Letter of 1806, published to the army in India in 1807, officers were debarred from the rank of colonel, except by his Majesty's brevet, for two reasons therein assigned : first, that lieutenant-colonels of his Majesty's service might not be superseded ; and secondly, that lieutenant-colonels of the Hon. Company's service might not supersede each other.

In what follows, it is proposed to shew, that neither reason secures the expected advantage ; or otherwise, that it is equally attainable without infringing on the orders of 1796, and usage of ten subsequent years.

1st. If the 20,000 troops of his Majesty's service in India were permanently stationed there, the officers of the higher ranks might be jealous of occasional supersession, as it would affect them for the remainder of their military career ; but when it is considered that the different regiments remain in India only ten or fifteen years, and experience during that period frequent changes in their field officers, the point cannot be estimated as of much moment to his Majesty's army generally : moreover, if an officer of the Company's service, after forty-two years' service, (which is the standing of the many whose promotion is stopped now,) should occasionally supersede a lieutenant-colonel of his Majesty's service, the latter might not be at all affected by it, as would be the case if he were serving under a different presidency, or even on a different station ; or otherwise a reference to the ensign's commission of both would generally find the officer of the Company's service the older soldier ; in which circumstances the superseded party could not have real cause for complaint. If, however, the supersession of lieutenant-colonels of his Majesty's service must at all events be guarded against, (although without any security it would be but of rare occurrence,) the local rank of colonel might be given ; as that of captain is to subalterns of fifteen years standing, to prevent supersession by those of the Company's service.

2dly. With reference to the second reason, the Company's army could never have desired restraint upon the whole, to prevent the better fortunes of a few, when either branch had equal chance of advancement, and each perhaps thought its prospects better than those of another. There is also more the appearance than reality of equity and

justice in it; for these ends could only result from its being a uniform system from the lowest grade, and not by a chequered plan of regimental rise to majority—line promotion to lieutenant-colonel, and then an indefinite stop of years to the advancement of those who would otherwise be colonels, and aspiring in due time to be generals by his Majesty's brevet, when their services to the state would be rewarded at the end of their career with the twofold advantage of rank and emolument as heretofore:—but as circumstances now are, the officers for the highest commands will only be of the rank of lieutenant-colonel and lieutenant-colonel commandant: and as promotion to colonel in his Majesty's service during peace in Europe must be very slow, that to general cannot be looked forward to by the present seniors of the Company's army, who are, in reference to advancement, but lieutenant-colonels, though nominally lieutenant-colonel-commandants. The general effect of the present system may be further surmised and established from the practical result exhibited in the Bengal Army List, or East-India Register, for September 1823, when there were three lieutenant-colonel-commandants (cadets of 1781 and 1782), viz ;

Dewar, of infantry, lieutenant-colonel of August 1811—lieutenant-commandant of March 1823.

Carpenter, ditto, lieutenant-colonel of October 1811—and lieutenant-colonel-commandant of April 1823.

Caldwell, of artillery, lieutenant-colonel of March 1812—lieutenant-colonel commandant of May 1820.

It will be observed, that Caldwell is only seven months junior to Dewar, and five months junior to Carpenter, as lieutenant-colonel; so that his becoming a colonel before them could not have been considered extraordinary good fortune. He must, however, according to the present system, wait till they are promoted; and as a brevet, embracing lieutenant-colonels of 1811, would probably exclude those of 1812, they may be colonels *many years* before the check to his promotion would be removed, without that general advantage to the service calculated upon in the second reason assigned for it by the Hon. Court; for if cotemporaries of ranks respectively (above that of major) do not preserve their relative position by it, its ostensible and only legitimate object is not attained, nor can it be more attainable by it than by the usage before 1807, which, as being more agreeable to the army, and equally advantageous to the state, will, it is to be hoped, be ere long reverted to and re-established.—*Asiatic Journal*, May 1826.

DEFICIENCY OF EUROPEAN OFFICERS IN THE INDIAN ARMY.

To the Editor of the *Oriental Herald*.

SIR,

Head Quarters, Promé, August 1825.

In bringing to the public notice the oft repeated theme of the deficiency of officers in our Indian army, I am almost tempted to despair of success, as the subject would appear to have been thoroughly canvassed, and finally decided upon, prior to the celebrated new arrangement of 1824. I think, however, that I can show good reasons for that distribution of officers being considered utterly inadequate to the exigencies of the service at present, more particularly when a war is raging hitherto unparalleled in our Indian history. Prior to the new arrangements, the strength of a battalion, in officers under the rank of Major, consisted of four Captains, eleven Lieutenants, and five Ensigns. This, we should suppose, (if no staff existed, and no officers were obliged to go to Europe for the recovery of their health,) as barely sufficient for the duties of a corps 1000 strong. But when we consider the very great proportion of staff officers necessarily taken from the line, and that at least two or three officers from every corps are generally absent in Europe, it becomes natural to suppose that the Court of Directors would have authorized some considerable augmentations, little short of doubling the number of regimental officers, and calculated to render our regiments as efficient as those of his Majesty. That such hope existed is true, but it was most lamentably disappointed. Instead of an augmentation, the Court allowed the number of officers to be the same precisely as before, changing the two senior Lieutenants of the old Regiments into Captains, and allowing the Subalterns to remain in *statu quo*. The strength now of a regiment of one battalion is, one Colonel, one Lieutenant-Colonel, one Major, five Captains, ten Lieutenants, and five Ensigns, thus making no allowance for staff and absentees. The plan I propose for efficiently officering the Native army is as follows: With respect to Field Officers, I am of opinion there is a sufficiency, but certainly not of Captains and Subalterns. I say, therefore, *with due regard to the Company's finances*, that the establishment should be as follows: Eight Captains, sixteen Lieutenants, and six Ensigns,—the Adjutant and Quartermaster included amongst the Subalterns; and most indubitably, they ought not to be allowed to hold companies, except when absolutely necessary.

I may here advert to the practice of the Court, in not sending out a sufficient number of cadets every season to fill up vacancies occasioned by deaths in this country. They at last discover the want of young officers, and then send out a prodigious number all at once, wholly unfit for some time to make themselves useful in their profession; whereas, if the supply was equal and constant, every corps would be provided

with a sufficient number of steady and experienced officers capable of performing all duties required of them. No officer can be considered *efficient* until he has been a year at least, or more properly, eighteen months, doing duty with his regiment. He cannot be expected to understand the language, and know the ideas and prejudices of the Natives he is called upon to command. I really think an augmentation of the nature I have just mentioned would be more beneficial than ten new regiments; and I cannot but express my earnest hope, that the Court of Directors will take the matter into their most serious consideration, as nothing short of a predominant European influence can make the natives of India the gallant, steady soldiers, they have proved themselves when well and numerous officered. I now, Mr. Editor, beg to subscribe myself your most obedient servant,

AN INDIAN OFFICER.

Oriental Herald, March 1826.

We are furnished with the following view of the state of the Indian army for the Bombay presidency, calculating on twenty-six regiments of infantry, including European :—

	Lieut. Cols. Comdt.	Lieut.-Cols.	Majors	Cpts.	Lieuts.	Ensigns.
Establishment of each..	1	1	1	5	10	5
Total for 26 regiments..	26	26	26	130	260	130
Absent from their regiments on Government commands; Staff employ; extra battalions in the service of Native Powers; provincials; and on furlough to Europe; not one half of which are put down in the Army List,.....	26	21	14	98	82	35
Present with the whole 26 regiments.....	0	5	12	32	178	95

“ This gives an average of twelve officers for each regiment; out of which the average number in sick quarters is three, frequently more but seldom less; leaving about nine officers to each regiment of 1000 strong, including Commanding Officer, Adjutant, and Quarter-master!! The Bengal and Madras presidencies are as badly off. With this proportion of officers, if ever serious opposition is met with, defeat must ensue; it has invariably been the case where the enemy have made a bold stand. To look back for only three or four years :—

“ 1st. In the Gulph of Persia, the detachment under Captain Thomson (800) was annihilated, and all the guns and stores taken, only because there were not sufficient officers to lead the men. The expense

of fitting out the expedition that followed in consequence, would *more* that have paid a full complement of officers to the different regiments for ten years.

“ 2d. At the commencement of the Burmese war, Colonel Bowen's detachment was defeated at Doodpatlee for want of officers to lead the men ; and Captain Noton's detachment (1,300, with only nine officers) were annihilated for want of a sufficient number of the latter. Had these two detachments been successful, the spirits of the enemy would have been damped, and peace on our own terms would, in all probability, have been the immediate consequence, instead of the ruinous war now carrying on ; the expense of which has already been more than would have paid a full complement of officers to the whole Indian army for almost half a century.

“ 3d. The defeat of Colonel Smith, C. B., near Rangoon, was really occasioned by want of officers : when the few he had left, the men broke, and ran away.”—*Oriental Herald*, April 1826.

ARTICLE IV.

COLONEL MACDONALD AND CAPTAIN PARLBY.



To the Editor of the Military Repository.

SIR,

Perhaps you will admit into your pages of the next Number the accompanying letter.

ALLAHABAD, }
2d October, 1826. }

Your obedient Servant,
S. PARLBY,
Captain Artillery.

To the Editor of the Military Repository.

Summerlands, Exeter, April 20th, 1824.

SIR,

AN account of your second attack has been just handed to me, and I am called on to reply; and shall easily make it appear, that this renewed attack is still more unsuccessful than your former, so unnecessary, and uncalled for.

It is previously requisite to review the subject briefly, in reference to the experiments made repeatedly in India, and in this country.

You render Major General Grace very prominent, making him the *magnus Apollo*, and hero of your tale. He had nothing more to do with the matter than I have already stated; and was not a member of the Committee that made the report I referred to, in order to prove, that the fuzes driven by the engine, burnt with a medium difference of a *quarter of a second*; while those driven by tried, proved, and selected drivers, burnt as stated. What account the general gave to the Marquis of Hastings, and to you, we are yet to learn. Fuzes driven by a few men out of a number, as was done under Lieut. Grace, in those days, may burn almost as exact, as those driven by an engine; but far different will be the comparative result, if the trial is made with a *number of fuzes taken promiscuously* from those in store, in an arsenal. General Grace was, if possible, more hostile than yourself, in saying what the report will not warrant, viz. that "the experiments which were tried with the engine for driving fuzes, have not been satisfactory."

Captain Byers, an artillery officer of known science and experience, was authorised by Lord Hastings to make a series of experiments *decidedly*, as he stated, *in favour* of the machine; and there was reason for supposing its adoption, because "instructions had been given for the machine to be sent to Cawnpore, in order to be used in the arsenal, for the construction of others."

Whatever may have been the assertions of General Grace, the report is the *Litera Scripta* of three honorable men ; and the various harsh words and expressions which you use the freedom to print, are utterly inconsistent with that report. As for your intemperate zeal directed against me, and your abortive attempts to depress me in public estimation, such can ultimately affect me, no more than the whistling of the empty wind.

Let us see how the matter stands at home ; and here, the fair charge of *partiality* and *garbling* must stand against you, as an *Editor*, till you act as you ought to have done, in the first instance.

It appears from the report made by the General, and Field officers at Woolwich, that the whole of the fuzes driven by the machine, burnt in *exact equal times* ; and yet, in the very face of this *decisive fact*, you, Sir, are pleased to print —“ that the fuze engine has not met with more success at Woolwich than in Bengal.” If this, in addition to similar expressions, does not evince more than *unjust indignation*, I know not what does. You appear to me, to arrogate a privilege of printing what you please ; and to be indignant, when such extraordinary conduct is necessarily and unavoidably animadverted to.

It was objected to the engine, that it did not condense the composition sufficiently ;—that it drove one fuze, while the hand drove two ;—and that its fuzes burnt in somewhat less time than those driven by the hand. In the various letters alluded to in my reply to you, Sir, I stated in detail a simple and obvious mode of completely remedying what cannot for a moment be put in competition with fuzes found to *burn in equal times*. I objected to the experiments made only with a few fuzes very carefully driven, as in India. I proposed various useful modifications of varied experiments, in order to bring common fuzes to a complete test, that would leave nothing further either necessary or desirable, to be known on the subject of common fuzes.

Now, Sir, as an *impartial editor*, you ought to have published the letters containing all this ; as independent of the unquestionable fairness of so requisite a procedure, your readers could not possibly understand the whole of the subject without these letters.

In your second attack, you seem to feel a consciousness of this, by mentioning some difficulty in getting the book containing these indispensable letters, to which, as an awkward sort of apology, and remedy, you refer your readers, as if they could possibly have easy access to a work at Calcutta.

By the word “*inconvenience*,” I meant that your readers would feel that you did justice neither to them, nor to the subject till you gave them these letters, to enable them to judge for themselves, and not, through your omissions, and prejudices. As for your saying, “*we really do not consider their publication in the least necessary for our own justification*,” I can tell you, that according to usages in such cases, no one can accord with you in such an extravagant opinion. You, Sir, thought proper, from no commendable motives, to make an attack, in no qualified terms ; and consequently, as a gentleman of supposed proper feelings, you are bound to publish both

sides of the case, to maintain your consistency, and to avoid injustice.

I am glad I have furnished you with an opportunity of telling your readers how much extra matter you give them for their money ; and to do your editorial character justice, these letters will come in under this description.

Seeing that my fuzes burnt in *exact equal times*, I certainly am justified in applying the word "*erroneous*" to your severe and unfounded remarks, where you had the temerity to imagine that you were secure from reply.

I am surprised that it escaped the attention of a personage of your acuteness, that Lord Mulgrave, in his capacity of Master General of the Ordnance, read *in manuscript*, what you *erroneously* suppose he was unacquainted with, when he wrote a letter which does that intelligent nobleman much honour.

There is not the slightest occasion to make any farther experiments, to prove the accuracy of the machine · but it is susceptible of the improvements fully described in the letters that I must consider as suppressed*, till you publish them in you Repository, as an act of common justice, where an injury has been done by omitting them.

As for your witticisms, pray take the full benefit of them. The specimen you indulge me with, confirms the well known description, that this rare quality is

What oft is thought, but ne'er so well expressed.

I have the honour to be,

Sir,

Your faithful Servant,

JOHN MACDONALD.

* We regret that a press of other matter, will not admit of our inserting the letters above alluded to, which our predecessor, Captain Parlby, we feel assured, never wished should be "suppressed."—EDITOR.

ARTICLE V.

WINDAGE OF ORDNANCE, &c.

The following Tables having fallen into our hands, we have much pleasure in giving them publication, as exhibiting the windage of ordnance, and the diameter of ordnance bores, shot, shells, and guages, as determined by the Royal Board of Ordnance, so late as September 1825.

We understand that the ordnance hereafter cast in Bengal, will be similar to the latest English patterns.

Dimensions determined by Orders of the Board of Ordnance, in September 1825, for Round Shot and Shells, shewing the Windage for their respective natures of Ordnance, with Founder's Limit, &c.

NATURE OF ORDNANCE.	Diameter of Bore.	Shot.					
		Diameter.		Founders Limit.	Windage.		
		Maxim.	Minim.		Least.	Medium	Grtst.
		In. Dec.	In. Dec.	In. Dec.	In. Dec.	In. Dec.	In. Dec.
Guns.	68 Pr.	8 05	7 95	7 85	0 1	0 1	0 15 0 2
	42 "	7 018	6 795	6 729	0 066	0 223	0 256 0 289
	32 "	6 41	6 207	6 147	0 06	0 203	0 233 0 263
	24 "	5 823	5 639	5 584	0 055	0 184	0 211 0 239
	18 "	5 292	5 124	5 074	0 05	0 168	0 193 0 218
	12 "	4 623	4 476	4 432	0 044	0 147	0 169 0 191
	9 "	4 2	4 1	4 06	0 04	0 1	0 12 0 14
	6 "	3 668	3 568	3 532	0 036	0 1	0 118 0 136
	3 "	2 913	2 833	2 803	0 03	0 08	0 095 0 11
	68 Pr.	8 05				0 1	0 15 0 2
Carro- nades.	42 "	6 84				0 045	0 078 0 111
	32 "	6 25	Shot	Shot	Founders	0 043	0 073 0 103
	24 "	5 68	as	as	limit	0 041	0 0685 0 096
	18 "	5 16	above.	above.	as above.	0 036	0 061 0 086
	12 "	4 52				0 044	0 066 0 088
	9 "	4 14				0 04	0 06 0 08
	6 "	3 6				0 032	0 05 0 068

NATURE OF ORDNANCE.		Diameter of Bore.	Shells, Common and Spherical Case.					
			Diameter.		Founders Limit.	Windage.		
			Maxim.	Minim.		Least.	Medium	Grts.
			In. Dec.	In. Dec.		In. Dec.	In. Dec.	In. Dec.
Mortars and Howitzers.	13 In.	13 0	12 88	12 8	0 08	0 12	0 16	0 2
	10 "	10 0	9 88	9 8	0 08	0 12	0 16	0 2
	8 "	8 0	7 95	7 85	0 1	0 05	0 1	0 15
	5½ "	5 62*	5 62	5 57	0 05	None	0 025	0 05
	4½ "	4 52	4 476	4 432	0 044	0 044	0 066	0 088
Guns.	24 Pr.	5 66	5 62	5 57	0 05	0 04	0 065	0 09
	12 "	4 52	4 476	4 432	0 044	0 044	0 066	0 088
	68 Pr.	8 05	7 95	7 85	0 1	0 1	0 15	0 2
	42 "	7 018	6 795	6 729	0 066	0 223	0 256	0 289
	32 "	6 41	6 207	6 147	0 06	0 203	0 233	0 263
	24 "	5 823	5 62	5 57	0 05	0 203	0 228	0 253
	18 "	5 292	5 124	5 074	0 05	0 168	0 193	0 218
	12 "	4 623	4 476	4 432	0 044	0 147	0 169	0 191
	9 "	4 2	4 1	4 06	0 04	0 1	0 12	0 14
	6 "	3 668	3 568	3 532	0 036	0 1	0 118	0 136
	68 Pr.	8 05	7 95	7 85	0 1	0 1	0 15	0 2
	42 "	6 84	6 795	6 729	0 066	0 045	0 078	0 111
	32 "	6 25	6 207	6 147	0 06	0 043	0 073	0 103
	24 "	5 68	5 62	5 57	0 05	0 06	0 085	0 11
	18 "	5 16	5 124	5 074	0 05	0 036	0 061	0 086
Carro-nades.	12 "	4 52	4 476	4 432	0 044	0 044	0 066	0 088
	9 "	4 14	4 1	4 06	0 04	0 04	0 06	0 08
	6 "	3 6	3 568	3 532	0 036	0 032	0 05	0 068

The diameters of the high gauges are of the exact dimensions of the maximum size of shot and shells in the foregoing tables respectively, and the shot and shells must pass through their high gauges, and not pass through their low gauges.

The surfaces of the shot and shells to be even, and free from holes or flaws.

The shot to be carefully cast, with as small a mark as possible where the run of the metal ceases when the mould is full.

The alterations now made in the shells, only have reference to diameter, as the construction in every other respect continues as before.

Shells both common and spherical, are by the above dimensions applicable respectively to all natures of ordnance.

Shot, however, are not to be condemned as unserviceable from wasting away, till they pass through low gauges as follows, viz.

42 pr.	32 pr.	24 pr.	18 pr.	12 pr.	9 pr.	6 pr.	3 pr.
Inches. Dec.	6 684	6 105	5 547	5 04	4 403	4 0	3 498 2 775

* The 5½ inch or 24 pr. shells are rather of less diameter than the 24 pr. shot, to make them available for the existing 5½ inch howitzers and mortars; but in future the bores of these pieces will be increased to 5 66.

Diameter of High and Low Shot Bore and Windage of Ordnance.

	Diameter of				Windage of medium between maxim. and minim.
	Shot.			Bore.	
	Max im.	Minim.	Medium of maxim. and minim.		
	Inches.	Inches.	Inches.		
42	6 795	6 684	6 74	7 018	0 278
32	6 207	6 105 ^t	6 156	6 41	0 252
24	5 639	5 547	5 593	5 823	0 23
18	5 124	5 04	5 082	5 292	0 21
12	4 476	4 403	4 44	4 623	0 183
9	4 066	4 000	4 033	4 2	0 167
6	3 552	3 498	3 525	3 668	0 143
4	3 104	3 053	3 078	3 204	0 126
3	2 82	2 775	2 797	2 913	0 116
2	2 463	2 423	2 443	2 544	0 101
1	1 955	1 923	1 939	2 019	0 08

There is a maximum and minimum size of each nature of shot, the difference between the two dimensions being the limit allowed to the foundry in casting. The greatest and least windage therefore is found by deducting the maximum or minimum from the diameter of the bore ; but taking a medium of the two from the diameter of the bore shows more properly the true windage. Some measures are under consideration for correcting the construction of shot ; but the maximum sizes are not intended to be increased, except in those for field pieces.

6th May, 1825.

ARTICLE VI.

NEW METHOD OF OCCULTATIONS.



Cawnpoor, 24th August, 1826.

Sir,

In the present universal zeal for the study of theoretical astronomy, it appears that little or no attention is paid to the absolutely practical part. While the giants of science are displaying their powers in adding to general knowledge by their investigations of the parallax of the fixed stars, motion of the solar system, elements of the new planets, it may still remain to those who may be comparatively styled the *pygmies* of science to contribute their mite, however small, to the general stock. That geodesy has been more fortunate, the works of Puissant, and Malorti's evident translation of him, will testify; but no individual has yet come forward to throw the numerous astronomical formulæ, which may be elicited by the most superficial mathematician, into that most useful and compendious of all forms, that of Algebra. Folios of tables, as superfluous as useless, may be daily edited; but I appeal to the majority of the lovers of astronomy, whether the labour of selection from their numerous and minute divisions be superior to the mental gratification that arises in working from a neat and symmetrical formula. Even the argument of convenience comes in aid of my assertion; for what traveller (perhaps no lover of astronomy) will not prefer a small formula book, with a table of Logarithms, to the carriage of numerous and weighty books of tables? Far be it from me to confer an exclusive anathema; for while such as appear at the end of Malorti's work on barometrical heights, containing more steps than the formula itself, must ever disgust the mind, there are others which, from their faci-

lity and frequency of examples, must appear almost absolutely necessary. Should these remarks (penned, I hope, with deference to superior opinions,) and the following (I believe) original formula, prove worthy of insertion in your journal, I may hereafter (if required) add its investigation, and continue to contribute my mites.

I am, Sir, &c.

A. A.

Method (new) of Occultations.

- p = Moon's polar distance, $\left\{ \begin{array}{l} q = \text{Stars polar distance,} \\ m = \text{Moon's right ascension, } \left\{ \begin{array}{l} n = \text{,, right ascension,} \end{array} \right\} \text{ corrected.} \end{array} \right.$
 l = Latitude of the place reduced to the earth's centre.
 x = Moon's horizontal parallax reduced to the earth's centre.
 s = Sidereal time D = moon's semidiameter.
 d = Apparent distance of star and moon's centre, as found by this formula.
 t = Error in longitude of place (or time.)
 h = Hourly motion (moon's) in right ascension.
 k = Moon's hourly motion in polar distance.
 y = Parallax in polar distance of the point of occultation.
 z = (Parallax) in right ascension of the point of occultation.

FORMULA.

$$y = x \sin. q \sin. l + x \cos. q \cos. l \cos. (s-n) + \frac{1}{2} \sin. 1'' \dots \dots \dots \left\{ x \cos. l \sin. (s-n) \right\}^2 \cot. q.$$

$$z = \frac{x \cos. l \sin. (s-n)}{\sin (q+y)}, v = (m \cos n) \cos z.$$

$$\cot. \phi = \frac{r}{p-(q+y)} \sqrt{\sin. p \sin. (q+y)} \quad d = \frac{p-(q+y)}{\sin. \phi} \text{ logarithm of } \frac{1}{2} \sin. 1'' = 4.385.$$

If $d=D$, it is evident the time has been taken correctly; otherwise the error is thus found:—

$$+t = \frac{\pm(d-D) d}{k \left\{ p-(q+y) \right\} + h z \sin. p \sin. (q+y)}$$

NOTE. We apprehend our kind Correspondent will find several errors have crept into the algebraic signs, from our printer not being able to make out his manuscript.

EXAMPLE.

$$\begin{array}{rcl}
 \text{Given } m & = & 127^{\circ} 45' 52'', 7 \\
 n & = & 128 \ 39 \ 25, 2 \\
 \text{Cos. } (28^{\circ} 51', 04) & = & 9.94245 \\
 \text{sin. } l & = & 9.68351 \text{ sin. } (e-n) 9.81807 - \\
 & & \log. \\
 m \cos n & = & 53 \ 33, 5 \\
 & & \cos. l = 3.50193 \dots \dots \dots 3.50193 \\
 e & = & 97^{\circ} 31', 61 \dots \dots \cos. q = 9.50815 \text{ sin. } q = 9.9762 \dots \dots 3.32 \\
 n & = & 128 \ 39, 42 \dots \dots \cos. (e-n) = 9.87602 \\
 e-n & = & 41 \ 7, 81 \dots \dots 12^{\circ} 49'', 3 = 2.8861-27' 36'', 5 = -3.21919 \\
 & & \text{m} \cos n = 53' 33'', 5 \\
 q & = & 71^{\circ} 12' \ 9'', 7 \quad z = 36 \ 50, 3 \quad \text{sin. } (q+y) = 9.97556 \\
 & & -27 \ 36, 5 \quad v = 16 \ 43, 2 \quad \text{sin. } p = 9.97546 \quad \frac{1}{2} \text{ sin. } 1'' = 4.385 \\
 & & +12 \ 49, 3 \quad \quad \quad 219.95102 \quad \text{cot. } d = 9.152 \\
 & & + \quad 3, 6 \quad \quad \quad 9.97551 \quad 3'', 6 = 0.566 \\
 & & -14 \ 43, 6 = y \quad \quad \quad v = 3.00139 \\
 q+y & = & 70 \ 57 \ 26, 1 \quad \quad \quad p-q+y = 2.1186 \dots \dots 2.1186 \\
 & & \quad \quad \quad 2.9769 \\
 p & = & 70 \ 55 \ 14, 7 \quad D = 15 \ 59, 4 \quad \text{cot. } \phi = 0.8583 \text{ sin. } \phi = 9.13757 \dots \dots 2.98003 = d \\
 p-q+y & = & 2 \ 11, 4 \quad d = 15 \ 57, 26 \\
 \text{Error} & = & 2, 14
 \end{array}$$

From whence the error in time could be found, &c.

IN the Calcutta Government Gazette of Thursday, 1st February last, the first article of our Tenth number was, through mistake, represented as the "*reprint*" of a report prepared in England.

IN now submitting a continuation of that article, we deem it proper to state, that the report in question never appeared in print, before it was admitted into our pages. Apprehensive of rendering ourselves justly liable to censure, for publishing without permission of its original framers, a document, which however professionally interesting, was never intended for the public eye, and which has been open to few, even in manuscript, in England, we little imagined, that in laying this before our readers, we should be considered obnoxious to the fault which the Editor of the Government Gazette has, in this case erroneously, imputed to us.

Although not unmindful of the criticisms passed upon us, we have yet ventured to continue our extracts from Suasso, unaccompanied by editorial remarks. The work itself is a running commentary upon Regulations, some of which have been but lately established, both for our native Indian and European Infantry. Remarks from us on these Regulations might be considered both premature and supererogatory, and perhaps offensive, while their introduction could only be effected by the exclusion of double the quantity of matter from that writer.

THE
BRITISH INDIAN
Military Repository.

VOL. VI. PART II.

ARTICLE I.
EQUIPMENT OF THE ROYAL ARTILLERY.

[Continued from page 55.]

TABLE No. 21.

Proposed Distribution of Artillery, to place on an efficient Establishment for Active Service, a Corps similar to that with the late Army of Occupation in France, in 1818.

1. The corps is supposed to consist of 24,000 Infantry, 3,000 Cavalry, the Infantry being formed in three, and the Cavalry in one division.

2. With this corps it is proposed to have ten Batteries, all of 9-pounders, viz.

3 Batteries of Horse Artillery.

7 Ditto of Field Artillery.

Viz.	Gunns.
Cavalry division, ..	6
1st Infantry do. ..	12
2d ditto ditto, ..	12
3d ditto ditto,	12
Reserve,	18

Total pieces.. 60

3. Each division of Infantry to have two Batteries of Field Artillery, and the division of Cavalry one Battery of Horse Artillery.

The reserve to consist of 2 Batteries of Horse Artillery, 1 ditto of Field Ar-

tillery.

VOL. IV.

AMMUNITION.

Rounds. 4. These Batteries to be equipped according to the establishment lately drawn out: they will therefore move with ammunition as per margin.

Rounds. 5. The reserve of gun ammunition to be conveyed in 60 Limber Waggon, being in the proportion of one waggon for each piece of ordnance with the corps. This reserve will complete the ammunition in the field, as per margin.

viz.
Reserve Ammunition.
 Limber Waggon with Cavalry, . . . 3
 Do. 1st Division Infantry, 6
 Do. 2d do. do. 6
 Do. 3d do. do. 6
 Do. with general reserve, 39
 ————— 60
 —————

6. A portion of the reserve gun ammunition, consisting of a waggon for every two pieces of ordnance, to accompany the divisions of Cavalry and Infantry, and the remaining gun ammunition to be with the general reserve.

7. The Artillery with divisions will therefore have, agreeable to the arrangement No. 6,
 210 Rounds per gun.
 174 ditto per howitzer.

But as the Cavalry reserve of gun ammunition consists only of three waggons, it is proposed that they should all contain 9-pounder ammunition, which would increase the rounds per gun a little, and the howitzer would have 144 rounds only.

8. The reserve of small arm ammunition to be conveyed in 100 limber waggons, distributed as per margin, each waggon containing 20,000 musquet ball cartridges.

9. The reserve gun and small arm ammunition attached to the Cavalry to be formed into a division commanded by a Lieutenant, as follows :

3 Limber waggons of Gun ammunition.
 4 Ditto ditto of Cavalry small arm do.
 1 Forge.
 1 Store waggon.

Total.. 9 as per detail of Equipment.

10. The above mentioned gun and small arm ammunition attached to a division of Infantry to be formed into reserves, each commanded by a Captain, as follows :

- 6 Limber waggons of gun ammunition.
- 12 Ditto ditto of small arm ammunition.
- 1 Forge.
- 1 Store waggon.
- 1 Spare howitzer carriage.

Total.. 21 as per detail of Equipment.

11. The sixty small arm ammunition limber waggons in general reserve, to be formed into divisions of 20 waggons, each commanded by a Captain, as follows :

- 20 Small arm ammunition limber waggons.
- 1 Forge.
- 1 Store waggon.
- 1 Ditto with stores for general distribution.

Total.. 23 As per detail of Equipment.

12. The thirty-nine gun ammunition limber waggons in general reserve (or say 40 to make an equal number) to be in like manner formed into divisions of 20 waggons, with the same additional carriages, making 23 in all per division, as expressed in No. 11.

13. Distribution of Ordnance and Carriages.

	Batteries.							Reserves.						
	9-Pounder.	24-Pr. Howzr.	Limber Waggon.	Forge.	Spare 9-Pr. Crge.	Store Waggon.	Store Cart.	Total.	Lr. Wgn. G. A.	Lr. Wgn. Small Arm. Ammn.	Forge.	Spare Hzn. & Cs.	Store Waggon.	Total.
Division of 1 Battery, Horse Arty.	5	1	9	1	1	1	1	19	0	0	0	0	0	0
Cavalry, Ammunition reserve, ..	0	0	0	0	0	0	0	0	3	4	1	0	1	9
1st Divn. { 1 Field Battery, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
Infantry. { One ditto, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
{ Ammunition reserve, ..	0	0	0	0	0	0	0	0	6	12	1	1	1	21
2d ditto. { One Field Battery, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
{ One ditto, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
{ Ammunition reserve, ..	0	0	0	0	0	0	0	0	6	12	1	1	1	21
3d ditto. { One Field Battery, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
{ One ditto, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
{ Ammunition reserve, ..	0	0	0	0	0	0	0	0	6	12	1	1	1	21
1st Battery, Horse Art.	5	1	9	1	1	1	1	19	0	0	0	0	0	0
One ditto ditto ditto, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
One Field Battery, ..	5	1	9	1	1	1	1	19	0	0	0	0	0	0
Reserve. { 1st Divn. Gun Ammn. ..	0	0	0	0	0	0	0	0	20	0	1	0	2	23
{ 2d do. do do. ..	0	0	0	0	0	0	0	0	20	0	1	0	2	23
{ 1st Divn. Sl. Arm Amn. ..	0	0	0	0	0	0	0	0	0	20	1	0	2	23
{ 2d do. do. do. do. ..	0	0	0	0	0	0	0	0	0	20	1	0	2	23
{ 3d do. do. do. do. ..	0	0	0	0	0	0	0	0	0	20	1	0	2	23
Total,	50	10	90	10	10	10	10	190	61	100	9	3	14	187

See No. 12.

14. According to the foregoing arrangement, the small arm would be distributed as follows :—

For Infantry.

In possession of the soldiers, 60 Rounds per man.

36 Waggon with divisional reserves, . 30

60 Ditto in general reserve, 50

Total. 140

For Cavalry.

In possession of the soldiers, 30 Rounds per man.

4 Waggon with divisional reserve, .. 30

Total. 60

15. A troop or company of Artillery to be attached to each battery, and half of a troop or company to each reserve of gun and small arm ammunition.

3 Batteries of Horse Artillery,	3 Troops.		
7 Batteries of Field Artillery,	0		7 Companies.
1 Reserve Cavalry divn. }			
1 Do. Infantry do. . . }			
2 General reserve gun ammunition, . . . }	9 Reserves,	$\frac{1}{2}$	4
3 Do. small arm ammunition, }			
<hr/>			
Total.. 34 Troops 11 Companies.			

The half troop of Horse Artillery to be considered as a reserve of men to keep up the Horse Artillery battery. It should be dismounted, and in strength should consist of half the non-commissioned officers and men of a troop, on the full establishment for active service. This half troop should take the duty of the Cavalry Ammunition Reserve, and the overplus officers and men be posted to a division of general reserve gun ammunition till otherwise wanted.

16. Three troops mounted, and half a troop dismounted, according to the establishment already detailed, and eleven companies, will be quite sufficient for the duties in the field; provided each company has 12 non-commissioned officers and 90 gunners.

The Royal Artillery Drivers to be in course, in conformity to the numbers required for the different equipments.

Infantry.

1st DIVISION.		2d DIVISION.		3d DIVISION.	
{ F. Batt. }	{ F. Batt. }	{ F. Batt. }	{ F. Batt. }	{ F. Batt. }	{ F. Batt. }
{ 9-pr. }	{ 9-pr. }	{ 9-pr. }	{ 9-pr. }	{ 9-pr. }	{ 9-pr. }
RESERVE.		RESERVE.		RESERVE.	
{ 6 Gun Amm. wags. }	{ 6 Gun Amm. wags. }	{ 6 Gun Amm. wags. }	{ 6 Gun Amm. wags. }	{ 6 Gun Amm. wags. }	{ 6 Gun Amm. wags. }
{ 12 Small arm do. do. }	{ 12 Small Arm do. do. }	{ 12 Small Arm do. do. }	{ 12 Small Arm do. do. }	{ 12 Small Arm do. do. }	{ 12 Small Arm do. do. }
{ 3 Forge Store wags. }	{ 3 Forge Store wags. }	{ 3 Forge Store wags. }	{ 3 Forge Store wags. }	{ 3 Forge Store wags. }	{ 3 Forge Store wags. }
{ — gons, &c. }	{ — gons, &c. }	{ — gons, &c. }	{ — gons, &c. }	{ — gons, &c. }	{ — gons, &c. }
{ 21 Total carriages. }	{ 21 Total carriages. }	{ 21 Total carriages. }	{ 21 Total carriages. }	{ 21 Total carriages. }	{ 21 Total carriages. }

Reserve Artillery and Ammunition.

{ Horse Artillery Battery, }	{ Field Battery, }	{ Horse Artillery Battery, }		
{ * 9-pounder. }	{ 9-pounder. }	{ 9-pounder. }		
{ 1 Div. S.A. Amn. }	{ 1 Div. S.A. Amn. }	{ 1 Div. S.A. Amn. }	{ 2 Div. Gun Amn. }	{ 1 Div. Gun Amn. }
{ 20 Wags. }	{ 20 Wags. }	{ 20 Wags. }	{ 20 Wags. }	{ 20 Wags. }
{ 3 Forge &c. }	{ 3 Forge &c. }	{ 3 Forge &c. }	{ 3 Forge &c. }	{ 3 Forge &c. }
{ 23 Carr. }	{ 23 Carr. }	{ 23 Carr. }	{ 23 Carr. }	{ 23 Carr. }

19. Supplying the battery of Horse Artillery with the Cavalry, and one battery with each division of Infantry with 6-pounders, the Ammunition would be as follows:—

Rounds per 9-pounder, 257

Ditto per 6-pounder, 371

Ditto per 24-pounder howitzer, 204

Difference between 9-pr. and Limber 6-pr. Troops, 34 By this arrangement of twenty 6-pounders, the army would have 2280 rounds of gun ammunition, more than if the equipment was all 9-prs. and at the same time would have 97 horses

Difference between three 9-prs. and three Limber 6-pr. Batteries, 63

Total.. 97 less.

17. *Abstract.*

	Troops.	Batteries.			No. of Reserve Gun Ammunition Wag-gons.	No. of Small Arm Am-muni-tion Wag-gons.	Horses.	
		No. of Batteries.	Guns.	Howitzers.				
				Total.				
Cavalry division, ..	3000	1	5	1	6	3	4	264
1st Division Infantry, ..	8000	2	10	2	12	6	12	439
2d ditto ditto, ..	8000	2	10	2	12	6	12	439
3d ditto ditto, ..	8000	2	10	2	12	6	12	439
Reserve Artillery, ..		3	15	3	18	40	60	1204
Total, ..		10	50	10	60	61	100	2785
In the event of an 18-Pounder Bat- tery being required, add ..		0	3	1	4	0	0	198
								2983

Proof of the Horses.

3 Batteries of Horse Artillery, at 220, 660

7 Ditto of Field Artillery, at 164, 1148

1 Cavalry reserve of Ammunition, at 44, 44

3 Infantry Division reserve of ditto, at 111, 333

2 Division general reserve Gun ditto, at 120, 240

4 Ditto ditto Small Arm ditto, at 120, 360

Total.. 2785

18. *Disposition.*

Cavalry Division.

Horse Artillery Battery, 9-pounder.

Reserve.

3 Gun Ammunition waggons.

4 Small Arm ditto ditto.

2 Forge and Store waggons.

9 Carriages.

Ammunition Reserve, Cavalry Division.

Number.		Royal Artillery.				Royal Artillery Drivers.				Horses.						
		Officers.	Non-Commissioned Officers and Drummers.		Gunners.	Total.	Officers.	Non-Commissioned Officers and Trumpeters.		Artificers.	Drivers.	Total.	Draft.	Riding.	Baggage.	Total.
4	{ Limber { Small arm ammn. }															
3	{ Waggon, { 30 Rounds pr. man															
1	ditto, Gun Ammunition,	0	0	0	0	0	0	0	0	18	18	36	0	0	0	36
1	Forge Waggon,															
1	Store Waggon,															
9	Carriages.															
ROYAL ARTILLERY.																
1	Lieutenant,	..	1	0	0	1	0	0	0	1	1	0	0	1	1	
2	Non-Commissioned Officers,	..	0	2	0	2	0	0	0	0	0	0	0	0	0	
15	Gunners,	..	0	0	15	15	0	0	0	0	0	0	0	0	0	
18	Total Artillery,	..	1	2	15	18										
ROYAL ARTILLERY DRIVERS.																
1	Serjeant,	..	0	0	0	0	0	1	0	0	1	0	1	0	1	
2	Corporals,	..	0	0	0	0	0	2	0	0	2	0	2	0	2	
1	Farrier,	..	0	0	0	0	0	0	1	0	1	0	0	0	0	
1	Shoeing Smith,	..	0	0	0	0	0	0	1	0	1	0	0	0	0	
2	Artificers,	..	0	0	0	0	0	0	2	0	2	0	0	0	0	
23	Drivers,	..	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	Total, R. A. D.		0	0	0	0	0	0	4	4	4	0	0	4		
	Spare,															
	Total,		1	2	15	18	0	3	4	23	30	40	3	1	44	

ROYAL ARTILLERY.									
1 Captain,	1	0	0	0	0	0	0	0	2
2 Subalterns,	2	0	0	0	0	0	0	0	4
1 Surgeon (1 Horse for Medicines,)	1	0	0	0	0	0	0	0	3
1 Sergeant,	1	0	0	0	0	0	0	0	0
2 Corporals,	2	0	0	0	0	0	0	0	0
3 Bombardiers,	3	0	0	0	0	0	0	0	0
1 Drummer,	1	0	0	0	0	0	0	0	0
40 Gunners,	40	0	0	0	0	0	0	0	0
51 Total,	51	7	40	40	51				
ROYAL ARTILLERY DRIVERS.									
1 Staff Sergeant,	1	0	0	0	0	0	0	0	2
1 Sergeant,	1	0	0	0	0	0	0	0	1
2 Corporals,	2	0	0	0	0	0	0	0	3
1 Trumpeter,	1	0	0	0	0	0	0	0	1
1 Farrier,	1	0	0	0	0	0	0	0	1
3 Saddling Smiths,	3	0	0	0	0	0	0	0	1
2 Artificers,	2	0	0	0	0	0	0	0	0
81 Drivers,	81	0	0	0	0	0	0	0	0
74 Total.	74	0	0	0	0	0	0	0	0
Spare,...	0	0	0	0	0	0	0	0	11
Total,...	4	7	40	40	51	0	6	7	120

Ordnance Commissariat for a Corps of the before mentioned Strength.

STORE BRANCH.	Chief or principal Commissary.	Commissary.	Assistant Commissary.	Clerk of Stores & Assistant Commissary.	Conductors.	Total.
For the whole command, at or near Head Quarters, ..	1	0	2	3	3	9
For the Point of Debarkation, ..	0	1	1	3	3	8
For two Depots, fixed Stations, ..	0	0	2	2	4	8
Three Divisional Ammunition Reserve, ..	0	0	0	3	3	6
One ditto Cavalry ditto ditto, ..	0	0	0	0	1	1
Two reserves General Ammunition, ..	0	0	0	5	5	10
Total,..	1	1	5	16	19	42

PAY BRANCH.	Pay Masters.	Assistant Pay Masters.	Clerks.	Total.
For the whole command at or near Head Quarters, ..	1	0	5	6
For the Point of Debarkation, ..	0	1	2	3
For the Payment of Batteries and Reserves considerably detached, ..	0	1	2	3
Total,..	1	2	9	12

Remarks on the Formation of Ordnance Commissaries.

The Sub-Committee propose, that the Clerks of Stores should be styled Deputy Assistant Commissaries, or Paymasters, to place this class, whose duties are important in the Artillery service, on a par with similar appointments in the General Commissariat of the army; inconvenience and delay having been experienced in detached situations, from the Clerks of Stores being considered on a footing with the inferior class of clerks attached to the several departments of the army.

The Sub-Committee are of opinion, that the Conductors with the ammunition reserves would be better constituted by being non-commissioned officers taken from

the companies, with a small addition to their pay while so employed; and those at the depôt, or employed in the offices of the Commissaries, to be composed of pensioned non-commissioned officers of intelligence, with competent pay, to whom such an appointment would be an object: for their duties require a knowledge of stores, and are in many cases laborious, which the young lads that have hitherto been appointed as Conductors have in general proved entirely unequal to.

TABLE No. 22.

Observations with regard to the Quality, Mode of Packing, and Conveyance of Small Arm Ammunition.

Quality 1. The variety of small arms made use of in the British army is a matter requiring particular consideration, as nothing can be more embarrassing on service than the complication occasioned by a great many natures of ammunition. This was fully exemplified in the Peninsular war, when no less than nine different kinds were carried in the field, viz.

Musket.

Rifle,	{ 22 to the lb. 20 to the lb.	
Carbine,	5½ Drachms,	} Heavy Cavalry.
Pistol,	3½ Ditto,	
Carbine,	4 Ditto,	} Musquet Bore.
Pistol,	3 Ditto,	
Carbine,	3 Ditto,	} German Hussars. { Carbine Bore. Common Pistol Bore.
Pistol,	3 Ditto,	
		} Light Dragoons.
		} Carbine Bore.

In which it is to be observed, there are two kinds of Rifle, and no less than six of Cavalry ammunition. Both the species of Rifle ammunition, it is true, are for some arm; but the different Rifle corps did not fully accord as to their use, some preferring the cartridges of 20 to the lb. and of others those of 22 to the lb. covered with fus-tian. It would therefore be a desirable thing to consult the officers most conversant with Rifle duties, to ascer-

tain the kind of ammunition they consider best calculated for the service in general, and also that some experiment should be made to prove the same, in order that the Rifle ammunition, if possible, may be reduced to one nature.

With regard to Cavalry ammunition, the Sub-Committee cannot help thinking it might be reduced to two natures of charge for the whole Cavalry service, viz. *Carbine* and *Pistol*; and it appears to them great convenience would attend the Cavalry small arms being all of Carbine Bore, which would admit of the Rifle cartridge being occasionally used, when no Cavalry ammunition was at hand.

2. It has frequently been a subject of complaint, that the established charges of small arms are too great; and many officers of experience have given it as an opinion, that the expected reaction of the arm in firing occasions want of precision: indeed from the dread of this, the soldiers, in loading, are in the habit of shaking out part of their powder, which must cause great uncertainty of effect. This being a matter highly deserving consideration, the Sub-Committee think, if experiments on the subject were carried on, it would probably be found, that by a reduction of one sixth, or even one fourth of the charge, the effect would be equally good; the more so, as the strength of powder is now greatly increased. It is further to be added, that by this would be obtained the advantage of a considerable economy of powder.

Mode of Packing. 3. The mode of packing small arm ammunition in half and quarter barrels, as has hitherto been the practice on service, is highly objectionable, on account of the ammunition not stowing well in the circular form of the barrel; and it was attended with great inconvenience during the late war, but particularly in the Peninsula, both in mule carriage, and in conveying the ammunition in musquet ball cartridge carts; for with the former, which was the principal means of transport, the barrels were very inconvenient to handle in loading and unloading the mules, being liable to constant falls, by which the ammunition was shaken and damaged, the hoops broke, and the barrels injured; so as to render it necessary

to have a cooper with the smallest detachment of mules. In addition to this, the loads, but particularly with quarter barrels, were so very unsteady on the mules, as to retard them frequently on the march.

With respect to the conveyance in ball cartridge carts, the ammunition was greatly shaken and injured, in consequence of not being compactly stowed in the barrels, which from hoops, &c. breaking, required the most unremitting attention of a cooper to keep them in repair; and it was further necessary to have coopers at all the fixed depôts, for the purpose of opening and closing ammunition for inspection previous to issue.

The objections with regard to packing small arm ammunition in barrels, having been submitted to the Master General and Board, it was finally determined to substitute boxes for this purpose, as they would require little or no repair, be more convenient for stowage and conveyance, afford great facility in inspecting the ammunition, and at the same time render the employment of coopers no longer necessary.

This arrangement has not been acted upon yet upon service, nor indeed does it appear that the description of box has been fully considered; for the Sub-Committee cannot help thinking the one constructed in the Laboratory is not sufficiently simple: they wish therefore to recommend the adoption of a common deal box, firmly put together, of a size to contain 1,000 musquet ball cartridges; and they have accordingly had one prepared, which they consider would perfectly answer the purpose required.

4. The Sub-Committee cannot conclude their observations on this branch of the subject, without mentioning the advantages they expect to be derived from the cartridges being packed with oil-paper, as is now doing for experiment in the Royal Laboratory.

Conveyance of small arm ammunition. 5. The usual mode of conveying small arm ammunition in the British service has hitherto been the musquet ball cart holding 12,000 rounds, and drawn by two horses. During the Waterloo campaign, however, only 10,000 rounds were carried in the cart, as

that quantity was deemed a sufficient load; but this, in common slow movements, even was found too much for a pair of horses: far less could they be expected, therefore, to move at an accelerated rate, when such was necessary.

In the Peninsula, where it was an object to take forward as great a quantity of ammunition as possible, the cart carried the 12,000 rounds; but to insure its getting on, there was a necessity for its being drawn by four horses; and they would have been required in France, on account of the deepness of the cross roads, had the cart been loaded to its full extent.

From the above, therefore, it appears that the present ball cartridge cart with the reduced load, is too much for a pair, and that it will contain too little ammunition for four horses. To remedy this inconvenience, therefore, the Sub-Committee are of opinion, that four-wheeled carriages for small arm ammunition would be far preferable to carts, and would afford the power of a better application of physical force for their movement.

Ammunition limber waggon have been fitted up in the carriage department in two different ways, for the conveyance of 12,000 musquet ball cartridges each, which the Sub-Committee beg to submit; and by the adoption of either of them, the great advantage will be obtained of one general ammunition limber waggon being used for the whole service.

In one mode of fitting, the caisson or coffree on the body contains 12,000, and that on the limber 8000 cartridges, packed in the deal boxes, 1000 each, before mentioned.

And in the other mode, the same proportions are carried in three boxes on the body, and two on the limber, the ammunition being packed in tin cases to contain 500 or 1000 cartridges each, covered with painted canvas: the ammunition is thus perfectly secure against weather, and is packed in the least possible compass. But on the fullest consideration of the whole subject, the Sub-Committee beg to recommend the former mode, as simpler for the general arrangement of small arm ammunition.

6. The Sub-Committee have to observe, that although in their arrangement for field equipment, the small arm ammunition limber waggons are proposed for 20,000 rounds, to move with four horses each, it is not without having adverted to the increased weight of the carriage, thus loaded beyond other ammunition carriages, which would render a diminution of ammunition necessary in the event of a difficult country : at the same time it has been deemed advisable that the waggon should be able to contain 20,000, in case the scene of operations admitted a facility of movement.

There would, as circumstances varied, therefore, be the power of regulating the movement of small arm ammunition as follows:—In a good country and summer season, the waggons might move with 20,000 rounds, drawn by four horses ; but in the event of a different country, on a procrastinated campaign, the same load would require an additional pair of horses ; and under every circumstance, the service might be continued with four horses, by diminishing the load of the waggon to 16,000, which its construction would admit of being done without danger, or injuring the ammunition.

A considerable advantage would be obtained also by the waggon being fitted for 20,000 rounds, as it would afford the means of bringing forward the greatest possible quantity from the depôts, and also of moving forward a greater proportion to points of assembly preparatory to battle, or for supply of advanced reserves, which in many instances would admit of waggons being sooner sent to the rear for more ammunition: besides, in the adoption of the general limber waggon, there would be little or no difference of weight in the waggon itself, whether it was prepared to carry 16,000 or 20,000 cartridges.

7. It may be argued in favour of two-wheeled carriages, that they would be more easy to conduct up great steeps, or to extricate from difficulties : but, reverting to the experience in Portugal, it may be considered as quite conclusive, that a four-wheeled carriage like our ammunition limber waggon, fairly horsed, can be conducted over every species of country where there is any thing

like a carriage road ; and on the other hand, the carriages with four wheels would possess the following important advantages over those with two.

There would be less wear and tear of horses than with the carts, where all work in shafts, and consequently fewer spare horses would be required with waggon reserves.

Carts would require to have all large, or what are termed wheel horses, whereas a mixed description of horses would be available for waggons, to be distributed for wheel and leading, as is practised with batteries of artillery.

The movement of ammunition reserves on waggons would be more compact than in carts, and form a shorter column in the line of march.

Should it be required to detach ammunition with great expedition from a waggon reserve towards any given point, it might be done by taking the leading horses from half the waggons, and advancing the other half rapidly with six horses, or by unlimbering, and sending the limbers alone with four horses. But this is an advantage that a reserve of carts would not admit of, for want of leading horses.

In case of retreat, and being pressed by an enemy, should the horses be hard worked, and the road very bad, considerable casualty would naturally be the consequence, which would occasion many carts being lost or destroyed ; for it would be impossible for a cart to proceed with one horse, though a waggon could do so with three ; that is to say, if a reserve of 12 waggons was diminished to 36 draft horses, it still could continue to move without diminution of carriages, whereas a reserve of 24 carts under similar circumstances would be obliged to abandon six carts besides. In the line of march, if a horse dropped down in a waggon, it could easily be extricated, and the waggon move on ; whilst the same thing occurring with a cart, if a spare horse was not at hand, the movement of the column would either be interrupted, or the cart thrown out of the road.

8. To conclude, the Sub-Committee recommend that the principal small arm ammunition reserve of an

army should always have with it a proportion of implements for making up ammunition, and also materials, if they can be conveyed.

(Signed)	W. MILLAR, <i>Col. Royal Artillery.</i>
„	W. ROBE, <i>Col. Royal Artillery.</i>
„	AUG. FRASER, <i>Lt. Col. Roy. Horse Art.</i>
„	A. DICKSON, <i>Capt. Roy. Horse Art. and Lieut. Col.</i>

WOOLWICH, }
April 10th, 1821. }

Detail of a Battering Train of 100 Pieces of Heavy Ordnance.

The 24 Pounders at 1000 Rounds per Gun,
 12 Pounders at 1200 Rounds per Gun,
 The 10 and 8 Inch Shells at 600 per Mortar and Howitzer, } Exclusive of case and spherical.
 The 5½ and 4½ Inch Shells at 200 per ditto ditto, } Exclusive of case and carcasses.

ORDNANCE AND IMPLEMENTS.	Guns.		Howitzers.		Mortars.				
	24 Pcs.	12 Pcs.	10 Inches.	8 Inches.	10 Inches.	8 Inches.	5½ Inches.	4½ Inch.	
Ordnance,	0	0	0	0	0	0	20	20	{ Equal number with the large Mortars and Howitzers, one half of each nature of small Mortars. In proportion of 6 Guns to 4 Mortars and Howitzers.
Carriages Complete, Travelling with Limbers,	40	20	5	10	10	15	0	0	
Mortar Beds	40	20	5	10	0	0	0	0	
{ Wood,	0	0	0	0	0	0	0	0	
{ Iron,	0	0	0	0	0	0	20	20	
with Coils,	0	0	0	0	10	15	0	0	
Hand spikes,	0	20	0	10	0	0	0	0	
{ Traversing,	160	40	20	20	40	30	0	0	
{ Common,	40	20	5	10	10	0	0	0	
Hand Crow Levers, 6 feet,	4	2	1	1	1	1	0	0	
Iron Crows,	80	40	10	20	10	15	20	20	
Spunges with Staves, }	10	5	0	0	0	0	0	0	
Rammers and bags, }	10	5	0	0	0	0	0	0	
Wadhooks with Staves,	10	5	2	3	0	0	0	0	
Ladders with ditto,	40	20	5	10	0	0	0	0	
Jack handcrews large,	40	20	5	10	0	0	0	0	
Grease Boxes,	40	20	5	10	10	15	20	20	
Linstocks with Cocks,	40	20	5	10	10	15	0	0	
Claw Hammers,	40	20	5	10	10	15	0	0	
Punches for vents,	80	40	10	20	20	30	40	40	
Priming Irons, long sets,	40	20	5	10	10	15	20	20	
Portfire Clippers,	20	10	3	5	5	8	10	10	

Detail of Battering Train, (Continued.)

ORDNANCE AND IMPLEMENTS.	Guns.		Howitzers.		Mortars.				
	24 Pr.	12 Pr.	10 Inches.	8 Inches.	10 Inches.	8 Inches.	5½ Inches.	4½ Inches.	
ORDNANCE AND IMPLEMENTS.									
Powder Horns, new pattern,	40	20	5	10	10	15	20	20	One every Gun and Howitzer, and 1½ spare. Or about 25 Flints per Lock.
Gun Locks,	44	22	6	11	0	0	0	0	
Musquet Flints, 2000,	0	0	0	0	0	0	0	0	
Cylinders of Wood for Cartridges,	80	40	0	0	0	0	0	0	
Jack Wads,	4000	2000	0	0	0	0	0	0	One in ten rounds.
Straps for side arms,	40	20	5	10	0	0	0	0	
IMPLEMENTS LABORATORY STORES.									Setts complete. Having an additional pair of loops, to increase them to 16 a sett, 2 setts for every 24 Pounder and 10 inch Mortar and Howitzers, and one sett for the others.
Men's Harness, heavy Setts,	80	20	10	10	20	15	0	0	
Leather Buckets,	84	40	10	20	20	30	4	4	
Marline Skains,	40	20	5	10	10	15	0	0	
Hambro' ditto,	20	10	5	10	10	15	0	0	Five for every piece of Ordnance.
Common Spikes,	200	100	25	50	50	75	0	0	
Spring ditto,	0	0	0	0	0	0	0	0	
Spunge Staves,	80	40	10	20	10	15	20	20	
Heads.	80	40	10	20	20	30	20	20	
Keys.	80	40	10	20	0	0	0	0	
Spare.	80	40	10	20	0	0	0	0	
Spunge, {	80	40	10	20	0	0	0	0	
Heads. {	80	40	10	20	0	0	0	0	
Keys, {	80	40	10	20	0	0	0	0	
Rings, {	80	40	10	20	0	0	0	0	
Fore, {	80	40	10	20	0	0	0	0	
Hind, {	80	40	10	20	0	0	0	0	
Washers. {	80	40	10	20	0	0	0	0	
Fore, {	80	40	10	20	0	0	0	0	
Hind, {	80	40	10	20	0	0	0	0	
AMMUNITION AND LABORATORY STORES.									
Rounds,	40000	24000	0	0	0	0	0	0	10000 Rounds each 24 Pr. 1,200 each 12 Pounder.
Case, { Common, Tin Shot,	2000	1000	0	0	0	0	0	0	050 Rounds a Gun.
Spherical, {	4000	2000	0	3000	0	0	0	0	1000 Rounds a Gun, and 300 for 8 inch Howitzer.
Round. Rounds, 100 each,	0	0	0	0	1500	0	0	0	050 for each 10 inch Mortar.

Detail of Battering Train, (Continued.)

AMMUNITION AND LABORATORY STORES.	Guns.		Howitzers.		Mortars.				
	24 Prs.	12 Prs.	10 Inches.	8 Inches.	10 Inches.	8 Inches.	5½ Inches.	4½ Inches.	
Shells, common, empty,	0	0	3000	300	6000	9000	4000	4000	10 Rounds for each 10 and 8 inch Mortar and Howitzer.
Carcasses. Round, fixed,	0	0	50	10	100	150	0	0	
Wood Bottoms for round shots,	0	0	0	0	500	0	0	0	
Valenciennes Composition,	0	0	500	0	1000	0	0	0	100 prop. each 10 inch Mort. and Howitzer.
Gran Powder, { Large grain, whole barrels of 90 lbs. each,	3455	1066	194	333	466	400	66	44	{ This is calculated for the No. of rounds at the service charge, and is required exclusive of powder in cartridges. The fine powder forms part of the 24-Prs. calculation, and is placed in that column, but it is intended for the several service, or the equipment, and is calculated at 2 barrels per piece.
{ Fine grain, half barrels of { 45 lbs. each, or 18,000 lbs.	400	0	0	0	0	0	0	0	{ One lb. for every piece.
Mealed, lbs.	40	20	5	10	10	5	0	0	
LABORATORY STORES.									
Flannel Car- { Field Service charge,	6000	3000	500	1000	0	0	0	0	{ 1 Cartridge for each round, including those filled, with $\frac{1}{10}$ spare.
{ For Service charge,	4480	2270	2850	5700	0	0	0	0	
{ Empty. { 8 Ounces,	0	0	0	0	0	0	2000	2000	{ Cartridges equal to half the No. of rounds.
Paper Caps for Cartridges,	20,000	10,000	0	0	0	0	0	0	{ As a substitute for wads, if wanted, one for 2 rounds.
Twine for chocking cartridges, one hundred pounds,	0	0	0	0	0	0	0	0	{ 1 lb. of each for every 1000 Cartridges.
Pack thread ditto ditto, one hundred pounds,	0	0	0	0	0	0	0	0	{ ½ for each spherical Shell.
Fuses, graduated. { Spherical,	8000	4000	0	6000	0	0	0	0	{ ½ for each common Shell.
{ Common,	0	0	4500	4500	9000	13500	6000	6000	
Tubes, brass. { One hundred and twenty seven thousand, being	0	0	0	0	0	0	0	0	{ 1 for each round, and $\frac{1}{10}$ spare.
- Tube Pockets with Straps,	80	40	10	20	20	30	20	20	

Detail of Battering Train, (Continued.)

LABORATORY STORES.	Guns.		Howitzers.		Mortars.				
	24 Pcs.	12 Pcs.	10 Inches.	8 Inches.	10 Inches.	8 Inches.	5½ Inches.	4½ Inches.	
Match, { Slow,	10	5	14	2½	21	34	1	1	{ ¼ Cwt. for each heavy piece, and the same quantity { for 2 small Mortars.
Quick, { Lengths,	0	0	0	0	6000	9000	0	0	
Portfires, { In balls, yds. 400,	0	0	0	0	0	0	0	0	{ One for every 12 Rounds, ½ of which common Port- { fires, ¾ Blue Paper.
Long, small, 3000,	0	0	0	0	0	0	0	0	
Blue paper, 6000,	0	0	0	0	0	0	0	0	{ ¼ lb. each Gun and Howitzer. { Needles each ditto ditto.
Portfire Sticks,	80	40	10	20	20	30	20	20	
Cutting Knives,	40	20	5	10	10	15	20	20	{ A Sett for 5 pieces. { 1 in 5 for large Mortars. 1 in 10 small ditto. { Ditto ditto ditto.
Scissors, pairs,	40	20	5	10	10	15	20	20	
Worsted, lbs.	10	5	1	3	0	0	0	0	{ 1 Mallet and 2 Setters for each Mortar and { Howitzer. { One for every 2 pieces.
Needles,	120	60	15	30	0	0	0	0	
Thumbstalls,	80	40	10	20	20	30	20	20	One for every 5 Ten Inch Mortar and Howitzer. Ditto ditto.
Copper Powder measures, 4 lbs. to one ounce,	8	4	1	2	2	3	0	0	
setts,	0	0	0	0	2	3	2	2	{ 1 Mallet and 2 Setters for each Mortar and { Howitzer. { One for every 2 pieces.
Copper Scales with Beams, pair,	0	0	0	0	2	3	2	2	
Brass Weights, 4 lbs. Files,	0	0	0	0	10	15	20	20	One for every 5 Ten Inch Mortar and Howitzer. Ditto ditto.
Mallets,	0	0	5	10	20	30	40	40	
Setters,	0	0	10	20	20	30	40	40	One for every 5 Ten Inch Mortar and Howitzer. Ditto ditto.
Tenore Saws,	20	10	3	5	5	8	10	10	
Setters for Saws,	20	10	3	5	5	8	10	10	One for every 5 Ten Inch Mortar and Howitzer. Ditto ditto.
Files, 3 square,	20	10	3	5	5	8	10	10	
Quadrants, Brass,	0	0	1	2	2	3	0	0	One for every 5 Ten Inch Mortar and Howitzer. Ditto ditto.
Perpendiculars,	0	0	1	2	2	3	0	0	

Spare, Transporting, and other Carriages for Battering Train.

	Spare Carriage Ordnance.				Wag- gons.		Carts.				Carriages.					
	24 Pounder.	12 Pounder.	10 Inches.	8 Inches.	FlandersPattern.	Store.	Forge.	Land withShaft.	Sling.	Trench.	Large.	Small.	Platform.	Large Drags.	Small Drags.	
No. of Carriages,	4	2	1	1	100	10	50	0	2	0	0	0	25	5	5	One spare Carriage for 10 pieces of Ordnance.
Covern. { Waggon, painted,	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	
{ Cart, ditto,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grease Boxes,	4	2	1	1	100	10	10	0	0	0	0	0	25	0	0	
Jacks handcrews, large,	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	
Linchpins, spare,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 per Carriage. Forges to be completed with these articles.
Chests of Tools, Anvils, & Blocks, Buck Irons,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HORSE HARNESS FOR CARRIAGES.																
Horse Harness complete, { Wheel,	8	4	2	2	200	20	20	0	0	0	0	50	306	0	306	18 Platform Waggon are at 8 Horses each, the Mortars and the remaining 7 at 4 Horses each.
with Whips, Leggins, Leader,	16	4	4	2	200	20	20	0	0	0	0	122	388	0	388	
Head Stall Halters, &c. { Off Wheel,	6	0	0	0	0	0	0	0	0	0	0	0	100	0	200	
HORSE HARNESS FOR ORDNANCE.																
Horse Harness complete, with Whips, Leggins, Head Stall Halters, Leaders, with Chains, Reins, &c. {	40	24	12	12	200	20	20	0	0	0	0	50	306	0	306	18 Platform Waggon are at 8 Horses each, the Mortars and the remaining 7 at 4 Horses each.
	40	24	12	12	200	20	20	0	0	0	0	122	388	0	388	
	40	24	12	12	200	20	20	0	0	0	0	0	100	0	200	
General Total Harness,																
	556	868	1524													

Detail of Battering Train (Continued.)

GENERAL STORES.			Number.	
Triangle Gyn,	Common,	8	About 1 for every 12 pieces.	
Iron Blocks with Brass Sheaves,	{ Treble, ..	0	} Complete for 8 Gyns.	
	{ Double, ..	0		
White Rope, { 6 Inch, for slings,	..	0		
	{ 4 Inch, for falls,	0		
Crab Capstain complete,	..	2	One for 50 pieces.	
Purchase Blocks with Brass Sheaves,	{ Treble, ..	5	} One for 20 pieces.	
	{ Double, ..	5		
	{ Single, ..	5		
Tarred Rope Coils, 4½ Inch,	..	4	One for 25 pieces.	
Blocks,	{ Double, { 10 Inch, ..	8	} Equal to No. of Gyns.	
	{ 8 do. ..	8		
	{ 10 do. ..	8		
	{ 8 do. ..	8		
	{ 5½ do. ..	8		
Rope Coils, tarred,	{ 4 do. ..	4	One for 25 pieces.	
	{ 3 do. ..	5	One for 20 do.	
	{ 2 do. ..	5	Ditto ditto.	
	{ 1 do. ..	10	One for 10 do.	
	{ 6 Inch, ..	1		
Rope Coils, white,	{ 4 do. ..	1		
	{ 3 do. ..	1		
	{ 2 do. ..	1		
	{ 1 do. ..	1		
Iron and Steel.	Spun Yarn, Coils, ..	5	One ton for 20 pieces.	
	Ratline, do. ..	5	Ditto ditto.	
	{ Iron of sorts, Tons, ..	2	One Ton for 50 pieces.	
	{ Steel, cwt. { Sheer, ..	1	} ½ Cwt. of each for 50 do.	
	{ Blister, ..	1		
	Coals, Chaldrons, ..	5	A Chaldron for 20 do.	
	Candles, Cwt. ..	1		
	Grease, Kegs, ..	200	2 per piece.	
	Lanterns,	{ Muscovy, ..	10	One for 10 pieces.
		{ Tin, ..	20	} One for 5 do.
		{ Dark, ..	20	
For Security of powder,	Tanned Hides, ..	50	One for 2 do.	
	Wadmilltilts, ..	50	Ditto ditto.	
	Hair Cloths, ..	100	One per piece.	
	Tarpaulins, { 30 Ft. by 15	25	One for 4 pieces.	
		{ 20 „ by 16	25	Ditto ditto.
		{ 14 „ by 10	100	One per piece.
Horse Shoes, with 3 Setts of Nails each,	..	0	{ 3 Setts of Shoes for every single Horse Harness.	
Shoeing Tools,	..	0	{ One Sett for every 50 single Horse Harness.	
Park Pickets,	..	0	One for 5 single Horse Harness.	
Wood Mauls,	..	0	One for Ten Pickets.	
Nosebags, new pattern,	..	0	3 for every 2 Horses' Harness.	
Cane Sacks,	..	0	One for do.	
Forge Cords, Setts,	..	0	One for do.	
Additional Head Collars,	..	0	{ One in 5 of No. of single setts of Harness.	

Detail of Battering Train (Continued.)

GENERAL STORES.		Number.	
TOOLS.	{ Collar Makers, ..	4	One for 25 pieces.
Chests of Tools,	{ Wheelers, ..	8	One for 12 do.
	{ Smiths, ..	4	One for 25 do.
	{ Coopers, ..	2	One for 50 do. if barrels are used.
Heavy Sledge Hammers,	..	4	For knocking off Trunnions.
Wrench Hammers of sizes,	..	10	One for 10 pieces.
	{ Axes, { Felling, ..	50	One for 2 do.
	{ Pick, ..	100	One for each piece.
	Spades, ..	100	Ditto.
	Shovels, ..	100	Ditto.
	Hand, { Bills, ..	100	Ditto.
	{ Hatchets, ..	100	Ditto.
	Barrows, { Hand, ..	50	Ditto ditto, 2 pieces.
	{ Wheel, ..	50	Ditto ditto.
	Grindstone with Trough, ..	2	One for 50 pieces.
Intrench- ing Tools.	{ Helves { Spades, ..	50	} ½ spare.
	for { Shovels, ..	50	
	{ Felling Axes, ..	25	
	{ Pick Axes, ..	50	
	Pit Saws, ..	2	
	Crosscut Saws, ..	2	
	Hand Saws, ..	10	One for 10 pieces.
	Setters { Pit, ..	2	
	for Saws. { Crosscut, ..	2	
	{ Hand, ..	2	
Nails.	{ Files for { Pit, ..	2	
	Saws doz. { Crosscut, ..	2	
	{ Hand, ..	3	
	{ 40 Penny, ..	3000	30
	{ 30 " ..	2000	20
	{ 20 " ..	4000	40
	{ 10 " ..	4000	40
	{ 6 " ..	2000	20
	Streaks of Sorts, ..	3000	30 of sorts. }
	Marline Spikes, ..	4	
	Screws of sorts, grosses, ..	10	One Gross for 10 pieces.
	Glue, lbs. ..	10	One lb. for 10 do.
	Oak, Skedding, 8x8 ..	0	
	Oak Planks, 3 Inch ends, ..	0	
Planks, superfi- cial feet.	{ Elm, { 1 Inch, ..	50	
	{ ½ ditto, ..	50	
	{ 1½ ditto, ..	0	
	{ Ash, { 1 ditto, ..	0	
	{ Sawn, ..	25	One in 4 pieces.
	Deals, { Whole, ..	25	Ditto ditto.
	Iron Shot Gauges, Setts, ..	4	
	Brass Calipers, large, Pairs, ..	2	
	Grates for heating Shot, ..	3	One for 20 Guns.
	Fire arms for ditto, Setts, } ..	0	In proportion to the Grates.
	Shot Bearers, ..	0	

Detail of Battering Train (Continued.)

GENERAL STORES.			Number.		
SPARE.					
Wheels.	24 Pr.	{ Gun, ..	8	One spare Wheel in 10 for Gun and Howitzer Wheel.	
		{ Limber, ..	4		
	12 Pr.	{ Gun, ..	4		
		{ Limber, ..	2		
		10 Inches,	{ Howzer, ..	1	One Spare Wheel in 20 for Gun and Howitzer limbers, and the Wheels of all other Carriages.
			{ Limber, ..	0	
		8 Inches,	{ Howzer, ..	2	
			{ Limber, ..	1	
		Wag-gons,	{ Flanders { Fore, ..	10	
			{ pattern, { Hind, ..	10	
			{ Forge, ..	2	
		Platform Car-riages,	{ Fore, ..	3	
			{ Hind, ..	3	
		Sling Cart,	..	2	
		Hand Cart,	..	5	
		Tench Cart,	..	5	
	Axletrees Irons,	{ 24 Pounder, ..	5	{ With beds of wood in proportion.	
	whole,	{ 10 Inch Howr. ..	5		
		{ 12 Pounder, ..	3		
		{ 8 Inch Howr. ..	3		
	Axletree Arm Irons of sorts,	..	35	One in 10 for Carriages.	
	Common Handspikes,	..	300	3 Spare per piece.	
	Traversing, ditto,	..	15	{ One for 2 12-pounder and 8 Inch Howitzer.	
	Bail Hoops,	..	200	{ Two for each Flanders pattern Waggon.	
IN THE ROUGH.					
	Spokes of sorts,	}	0	{ In quantity equal to No. of spare Wheels.	
	Fellies,	..	70	One in 5 of No. of Carriage.	
	Shafts of sorts,	..	25	One in 10 of all 4 Wheel Carriages.	
	Splinter Bars, ditto,	..	12	One in 20 do. do.	
	Guides. { Fore,	..	12	Ditto ditto.	
	{ Hind,	..	12		
	Under Poles,	..	10	{ One in 10 for Flanders pattern Waggon.	
	Raves,	..	10	One in 10 for Fl. pattern Waggon.	
	Tail Pieces,	..	10	Ditto ditto.	
	Smech Bars,	..	10	Ditto ditto.	
	Shaft Bars of sorts,	..	25	One in 10 of 4 Wheel Carriages.	
	Iron Tyer,	..	0	{ Equal to $\frac{1}{2}$ the materials for repairing Wheels.	
	Camp Equipage,	..	0	{ In the proportion as heretofore, according to the No. requiring [it.	
	Laboratory Tents, complete with Poles, Pins, and Mallets,	}	5	One for 20 pieces.	
COLLAR MAKER'S MATERIALS FOR THREE MONTHS.					
	Harness, Leather,	{ Stout Hides, ..	14	{ 1 Hide to 100 Sets of single Harness.	
		{ Light ditto, ..	7	{ do. do.	

Detail of Battering Train (Concluded.)

GENERAL STORES.		Number.	
Bazels, doz. of sorts,	..	28	2 Dozen to 100 setts of single Harness.
Gunners Girth, yards	..	112	8 Yds. do. do.
Surcingle, ditto,	..	42	3 Do. do.
Pannel Serge, ditto,	..	70	5 Do. do.
Doe's, or curled Hair, lbs.	..	210	15 lbs. do do.
Hemp, lbs.	..	42	3 Do. do.
Collar, lbs.	..	28	2 Do. do.
Dutch, lbs.	..	28	2 Do. do.
Harness and Bridles Buckles of sorts,			
dozens,	..	42	3 Dozen do. do.
Nails of sorts,	..	7000	500 Nails do. do.
Jacks of sorts,	..	7000	500 Jacks do. do.
Bristles,	lbs. ..	7	$\frac{1}{2}$ lb. do. do.
Needles of sorts,	..	400	100 Needles do. do.
Whip Cord,	lbs. ..	21	$1\frac{1}{2}$ lbs. do. do.
Tin Pans for Oil,	..	0	2 Pans do. do.
Wax, { Black,	lbs. ..	42	2 lbs. do. do.
Bees,	lbs. ..	14	$\frac{1}{2}$ lb. do. do.
Neatsfoot Oil, gallons,	..	21	$\left\{ \begin{array}{l} 1\frac{1}{2} \text{ Gallon to 100 setts of sin-} \\ \text{gle Harness.} \end{array} \right.$
Tallow,	lbs. ..	14	1 lb. do. do.
Punches of sorts,	..	140	10 Punches do. do.
Awls,	..	140	10 Awls do. do.
Horse Medicines,	..	0	A proportion.

OBSERVATIONS

With regard to the accompanying Equipment of Battering Train.

Ordnance. 1st. The proportion fixed on is six guns to four heavy mortars and howitzers, which, in the consideration of the Sub-Committee, may in general be adhered to with propriety, both of the smallest, as well as the largest equipments of battering equipments; and they feel fully borne out in this opinion by our principal armaments during the late war, as well as by the modern French details for equipping battering trains.

2. With every battering equipment there should be sent a proportion of mortars, in no case fewer in number than the heavy mortars and howitzers with the same; but this proportion ought to be augmented in all equipments

less than 30 pieces: indeed when sent at all, there should be at least twelve of them, to ensure the necessary effect. In many cases a far greater number than is here proposed could be advantageously used; but this must be decided by the circumstances of the service the Train is likely to be employed on.

In the present instance, the royal and Coehorn mortars have been taken in equal proportions, and it would be advisable to adhere to this in the larger battering trains, particularly when the calibre of them corresponds with the guns; but in small equipments, it would be more convenient to confine the arrangement to one nature, in which the royal mortar is preferable, as it possesses the power of being used at a greater distance, and a complication of ammunition is avoided: at the same time it is to be observed, that the Coehorn, from its lightness and small weight of ammunition, is a more desirable implement to employ in the closer parts of the attack.

3. The Sub-Committee propose to employ with battering trains, iron 12-pounders, eight feet long, in the proportion of one third of the number of guns, as a 12-pounder of this description is conceived to be sufficiently powerful for annoyance and direct fire to dismount the enemy's artillery, as well as for firing ricochet, and the diminished weight of ammunition is an important advantage attendant upon employment of this nature; but it is an arrangement that can be admitted only in cases where there is an adequate number of 24-pounders, and it would, therefore, be better with small equipments that all the guns should be of the heavy calibre.

4. The equipment is made on a supposition of the new iron 10 and 8-inch howitzers being introduced into the service, as they certainly would be far more durable than those of brass, which generally are injured by their own fire, before they have expended two or three hundred rounds: besides, the new iron 8-inch howitzer is well calculated to fire spherical case, which the brass 8-inch howitzer cannot do, and the 10-inch iron howitzer has the important advantage of being mounted on a travelling carriage.

Ammunition. 5th. The Ammunition in the present case is calculated as follows :

1000 Rounds per gun, exclusive of case shot and spherical.

600 rounds per large mortar and howitzer, } Exclusive of carcasses and rounds of pound shot.

200 Rounds per small mortar.

The only deviation from this principle is with regard to the 12-pounders, which are calculated at 1200 rounds shot each, as the facility of working these guns will at an easy rate afford the power of firing more rapidly than the 24-pounders, and be the means of saving ammunition in cases where mere annoyance is the object.

The proportion of one half common shells and one half spherical for the iron eight inch howitzers should always be adhered to.

6. In correspondence with the foregoing, it ought to be considered as a fixed principle of equipment in all cases, that the proportion of ammunition required should be in numbers of round shot and shells to the full amount demanded, independent of the requisite quantity of case shot, cannon, spherical, carcasses, &c.

7. The use of tier shot for the guns, instead of grape, is deemed most advantageous, as the former contains a far greater number of balls, and of a magnitude for the purpose required.

8. The powder is calculated at the following rates.

For Guns.—The service charge for the whole number of rounds, including case shot and spherical :

For 10 inch Howitzer and 10 inch Mortar. } 7 lbs. each round, including powder for filling for the whole number of rounds.

8 Inch Howitzer, at 6 lbs. ditto, ditto ditto.

8 Inch Mortar, at 4 lbs. each round, including powder for filling, for the whole number of rounds.

5½ Inch Mortar, at 1½ lbs. ditto, ditto ditto.

4½ Inch Mortar, at 1 lb. ditto, ditto ditto.

It is considered requisite that the powder should be to the full extent in quantity of the above detail, in order to provide for the loss that may arise in loading it on a dif-

ficult beach, and the injury it may sustain from bad weather whilst moving with the Train, as well as the casualties it is under all circumstances liable to, but more particularly those that occasionally occur from the explosion of expense magazines in the batteries, &c. to which may be added, the supplies frequently required by the Engineer Department.

9. The Sub-Committee propose that part of the above mentioned powder should be sent made up in cartridges in the following proportion, viz.

150 Rounds per gun, at the full charge.

100 Rounds per Howitzer, at the full charge.

By this arrangement, the Train will possess the advantage of always having a day's firing in readiness, and it will derive a greater one in the use of the boxes containing the made-up cartridges, as they will be of infinite service for the safe conveyance of the ammunition to the batteries during the whole siege.

10. Two or more barrels of fine grained powder per piece, always to accompany the Train, as part of its calculated proportion; this will serve for making up small arm ammunition, or any other purpose for which it may be required, and be equally available for the service of the ordnance.

11. It is a great object that some improvement be made in the security of powder for land movements, it being so liable to be damaged by weather when conveyed in the present powder barrels; as they do not resist wet in the smallest degree, and at the same time are apt to shake, and get out of order, by long marches, or by moving on rough roads, like the *chaussées* on the Continent, by which merely powder is frequently scattered along the roads in such a manner, as to occasion imminent risque of explosion. The Sub-Committee, therefore, with a view of remedying these serious objections to the powder barrel for protracted land carriages, beg to propose that a box lined with lead, of the same capacity as the barrel, should be substituted, which would be secure against all common accidents of weather, not liable to get out of order, and more compact, for conveyance either in waggons or on

mules ; and in furtherance of this, the Sub-Committee have had a box of this description prepared in the arsenal, which they beg to submit; and at the same time have to observe, that although the box weighs rather more than the barrel, and the expense is something greater, yet the advantages arising from the durability, stowage, and portability of the box, will more than compensate the trifling difference of weight and price. To this is to be added, the advantage of doing away a workman absolutely necessary for opening and closing up the barrel, and the keeping it in repair.

Cartridges. 12. It is highly requisite that the cartridges, both filled and empty, should be of flannel ; and under the uncertainty of the application of fire, that they should be all for the full charge; but in the event of firing in ricochet, they can be cut in such a manner, that the part taken off will make another ricochet cartridge.

Their being of flannel with battering trains, is thus strongly urged, in consequence of the many accidents that occur on service from paper cartridges breaking whilst conveying through the trenches, and also in the batteries, which very often occasion explosions attended with casualty, and consequent delay and confusion. To this may be added the safety that flannel cartridges afford in the service of the guns, whilst keeping up the rapid and vigorous fire so necessary in a siege.

One tenth spare of carriages is requisite to provide for loss by accidents, and also to afford the power of a second time firing shot that may be re-collected about captured outworks, and from the body of the place when taken, in the event of their being a citadel to attack.

Fuzes. 13. Although it is difficult to recommend any reform in regard to fuzes, on account of the immense number of shells at present in store, the Sub-Committee nevertheless deem it a matter highly deserving of consideration, that there should be fewer natures of fuzes in the service ; and they see no reason why the five now in use might not be diminished even to two, for both common and spherical shells, in the following manner.

13 Inch Forge,	{	To be of the same size, graduated, and numbered 1.	{	By the 13 inch shells here-
10 do. do.				after being cast with fuze holes of the same size as the 10 inch.
8 Inch Forge,	{	To be of the same size, to be graduated, and numbered 2.	{	By the 8 inch shells here-
5½ Inch ditto,				after being cast with fuze holes of the same size as the 5½ inch, and by the present
4½ Inch ditto,				4½ inch common shells being reamed up to the 5½ inch.

In the mean time the Sub-Committee beg to recommend, that all the common fuzes now in the service should be fitted and graduated in the same manner as those for spherical case.

In reducing the fuzes to two natures, the Sub-Committee propose that the largest size, No. 1, for 13 and 10 inch shells, should be of two lengths, for land and sea service; and that the smaller forge, No. 2, should be made also of two lengths, one of which having 4 inches, the other 2 inches of composition, the latter of two inches would be applicable to the 8 inch shell for short ranges, and to the 5½ and 4½ common, and all spherical shells in the service.

In making equipments on this arrangement, *all 8 inch shells* to be supplied with No. 2 four inch fuzes, and *all spherical and smaller common shells* with No. 2 two inch fuzes.

15. The arrangement of cut spherical not being deemed necessary for a siege, it is considered that two whole fuzes of this nature per shell are sufficient for all purposes.

Tube Pockets. 16. Tube pockets are mentioned in the equipment, as it is conceived that a leather bag for containing tubes would be more convenient to wear than the tube box now in use. These to be of the same pattern as those proposed for field service.

Wadding. 17. In future, jank wads not to be sent with battering equipments, with the exception of a proportion equal to one tenth of the number of round shot; for the purpose of being used in firing hot shot when required.

In the event, therefore, of guns firing with depression, some kind of wadding being requisite, paper caps for cartridges are proposed to be used, and a proportion is in-

cluded in the equipment for this purpose, equal to half the number of round shot.

18. Should it be deemed necessary in the first instance to augment the quantity of ammunition, or to forward at any subsequent period an increased supply, it may be done in the proportion of one half, or even the whole of the ammunition stated in No. 5, without any further addition to the equipment; but of course the due quantity of portfires, tubes, slow match fuzes, empty cartridges, &c. in conformity to the number of rounds, should be sent according to the proportions stated in the annexed detail.

Harness. 19. The calculation of harness is made on the supposition of the whole of the carriages being in movement at once, which could only be necessary in the event of operations being carried on to a greater distance from the coast; for otherwise two-thirds of the harness, or in some cases even one half, would be sufficient; but this can only be regulated when the object of the train is known, and its destination not likely to be changed.

The collar maker's materials are calculated for three months repairs, and they are in such proportions that they can easily be augmented or diminished, according to the quantity of harness that is sent with the train.

20. In the annexed equipment, there is a Flanders waggon for every piece of ordnance, which appears a good proportion to follow, whatever may be the size of the train. These waggons would be employed in conveying the laboratory and other perishable stores, as well as a proportion of powder; but with regard to the transport of shot, shells, and ammunition in general, the resources of the country must on all occasions be depended upon.

21. The platform waggons are calculated as follows:—

10 ten-inch Mortars with beds require 10 Platform Waggons.

15 eight-inch ditto ditto, 8

One Platform Waggons in five for Mortars spare, 4

One ditto ditto for every fifteen 24-pra.

and 10 inch Mortars, 3

Total.. 25

The other carriages are in the following proportions.

Store Waggon, 1 in 10 of number of Ordnance.

Forge ditto, 1 in 10 ditto ditto.

Sling Carts, 1 in 10 ditto ditto.

Hand ditto, 1 for 2 pieces.

Trench do. 1 for 2 pieces.

Drags, { Large, 1 for 20 pieces.
Small ditto.

Devil, small, 1 for 50 pieces.

The spare gun and howitzer carriages are in the proportion of one in ten.

Axletrees. 22. The Sub-Committee having observed, that the 24-pounder battering gun is the only one, the carriage of which has a wooden axletree, they are persuaded that an iron one can be adapted to it with the greatest advantage, experience having shewn that it is the part most apt to give way, both in tiring and travelling. The experience of the 18-pounder battering ordnance moving in Spain and France during the late campaigns, as well as the late experiments with the 10 inch iron howitzer, fully authorize this conclusion.

Men's Harness. 23. It being deemed unnecessary to have with battering equipments both drag ropes and men's harness, it is proposed to discontinue the drag ropes, and instead of them, that the entire proportion should be of heavy men's harness, of the same length as at present used, which will admit of their having an additional pair of loops to each, to increase them to sixteen men to a sett.

24. With regard to the annexed equipment, it is to be observed, that the stores in general are detailed in exact proportions according to the number of pieces, so as to be equally applicable to any augmentation or diminution of ordnance, by which a general principle will be obtained for the future equipment of battering trains.

25. The ordnance and stores in the equipment are classed in such a manner as to afford a facility of reference; and the Sub-Committee beg to propose, that the

same order of classing may be pursued in future in drawing up returns of battering trains.

(Signed) W. MILLAR,
Col. Royal Artillery.

„ W. ROBE,
Col. Royal Artillery.

„ A. S. FRAZER,
Lt. Col. Royal Horse Art.

„ A. DICKSON,
Capt. Royal Horse Art. and Lieut. Col.

WOOLWICH, }
April 10th, 1820.



MEMORANDUM

Of Artillerymen, at three and two Reliefs, required for the Siege of a Fortress, the Battering Train consisting of 100 heavy Pieces.

1. The Sub-Committee suppose that about three-fourths of the ordnance would be brought into play at once, as follows:

Detail of three Reliefs.

2.	25	24-Prs. at 6 men each.	150	N. C. Officers and Men.
	20	12-Prs. at 5 do. do.	100	
	4	10 Inch Howr. at 6 do. do.	24	
	16	10 Inch Mortars and 8 inch		
		Howr. at 5 men each,	80	
	10	10 Inch Mortar at 4 do. do.	40	
<hr/>			<hr/>	
		75 Pieces of Ordnance,	394	
			3	
			<hr/>	
		Total of three Reliefs for Batteries, 1182		
		For Laboratory duties,	50	
		Military Conductors, extra,	12	
		Reserve to replace casualties, &c. and		
		to conduct Amm. from the rear, . .	100	
			<hr/>	
		Total..	1344	

3. It is to be understood, that the whole numerical strength of the companies, non-commissioned officers and drummers included, may be comprized in the above detail.

4. Detail of Artillery at *two* reliefs, on the event of the operations promising to be of short duration.

One relief as before,	394 N. C. Officers and Men.
	2
	<hr/> 728
For Laboratory duties,	50
Military Conductors, extra,	12
Reserve to replace casualties, &c. &c.	150 at least.
	<hr/> Total 1000

5. The Sub-Committee observe, with regard to the reduced detail, that after the commencement of our fire, little or no aid could be obtained from the artillery reliefs beyond their service in the batteries ; for those out of action would require rest, and no material exertion could be expected from them during the day of being off duty. All the arrangements for supplying the batteries, therefore, and the various movements of ordnance, both in charges from one battery to another, and in arming new ones, done particularly by night, would become the immediate business of the reserve, which would have so much work to perform, that the calculation of 150 is taking it at as low a number as possible ; and besides, it would daily diminish, as all the casualties in the batteries would have to be immediately filled up from the number.

It is further to be observed, with regard to small battering equipments, that in all probability the whole of the ordnance would be in operation at once, and a greater number of men in proportion to the pieces engaged would consequently be required.

6. Although these calculations are made on as moderate a scale as the nature of the service would admit, the Sub-Committee nevertheless are aware, that so great a portion of the corps being always on detachment, it

would be matter of considerable difficulty to assemble a force of artillerymen equal even to the smallest number in the foregoing statement : to meet this difficulty, therefore, it ought to be a matter of serious consideration in sending forth all battering equipments, what aid could be obtained, in the event of continental service, from the field Artillery of the army, or from the Infantry as additional gunners ; and in like manner on maritime expeditions, what seamen could be spared to work the guns, in addition to those usually furnished to convey ammunition, &c. as heretofore : and by something of this kind being known, artillerymen may be sent with the train in such proportion as will insure the carrying on of the service. At the same time, the Sub-Committee beg to express their conviction of the impossibility of any siege of duration, or one in a tropical climate, being vigorously carried on with fewer than three reliefs.

Commissariat. 7. The Field Train Department required would be as follows :

One Commissary.

Three Assistants ditto, { One for the Shipping.
One for the Laboratory.
One for the Park.

Eight Clerks of Stores.

Eight Conductors of Stores.

Artificers. 8. The following Artificers would be required.

One Master Artificer—a Wheeler

5 Wheelers.

7 Blacksmiths.

5 Collar Makers.

2 Coopers, if powder *barrels* are used.

Articles of Equipment recommended to be abolished.

With Field Guns.

Aprons of Lead.

Muzzle Caps.

Drag Ropes. See following return.

Corn Bags on Ammunition boxes.

Gun Tarpaulins.

Swingle Trees.

Sheep Skins with Howitzers.

With Battering Train.

Aprons of lead.

Tampions.

Muzzle Caps for mortars.

Drag Ropes. See following return.

Painted covers for harness.

Couples for traces.

Swingle Trees.

With Field Guns.

Painted covers for harness.
 Leather Cartouches, except two
 per battery.
 Handscrew Jacks.
 Portfire Clippers.
 Chests for tools.
 Quadrants and Perpendicular.
 Three of the spherical Fuzes and
 Bags.
 Spoke Shaves.
 Bic Irons.
 Flax.
 Tow.
 Wooden Water-buckets } To be re-
 Do. Grease-boxes. } placed as
 Hair Nose-bags. } per follow-
 Tin Tube-boxes. } ing return.

With Battering Train.

Sheep Skins.
 Paper Cartridges.
 Grape Shots.
 Flax.
 Tow.
 Rasps, half round.
 Diagonal Scales.
 Copper Pincers.
 Copper Salting Boxes.
 Wood Vices.
 All cat spherical Fuzes and Bags.
 Carpenter's Tools.
 Cooper's Jointer Plane.
 Smith's Bellows, large.
 do. Anvil do.
 do. Bic Irons.
 Stable Shovels.
 Clouts, body and } On the suppo-
 linch. } sition of all iron
 Clout nails. } axles.
 Painting Materials.
 Wooden Water- } To be replac-
 buckets. } ed as per fol-
 } lowing return.

Articles of the Battering and Field Train Equipment recommended to be modified.

1. To substitute a prolonge instead of drag ropes with field guns, each limber waggon, however, having two pieces of two inch rope each, 6 yards long.
2. To substitute for the existing grease box with carriages, a tin grease box, of the pattern prepared in the carriage department.
3. To substitute a leather bucket for the wooden buckets hitherto used, and to have one with each carriage.
4. The limber and ammunition waggon covers to be of a simple construction, according to pattern in carriage department.
5. To have only one sponge per gun, and the wadhook to have a sponge head fitted at the other end; the spare sponge heads to be sent as usual.
6. To have a lock with each gun, as an additional resource for firing, but without diminution of the means of firing carried hitherto.
7. The Lifting Jacks to be of the pattern prepared in the carriage department.

8. The present tube boxes to be discontinued, and leather tube pockets substituted.

9. Each driver or mounted man to have a cavalry corn bag on his saddle, the corn bags formerly carried on the ammunition boxes to be discontinued; these bags are exclusive of the corn sacks required per carriage.

10. A canvas nose bag to be substituted for the hair one now used.

11. That, as already noticed in the body of the report, drag ropes with heavy ordnance to be replaced by men's harness, which is further recommended to be made so as to be applicable to the strength of 16 men, instead of 12 as hitherto.

[To be concluded in our next.]

ARTICLE II.

SUASSO ON INFANTRY MOVEMENTS.

[Continued from p. 94.]



OF FIRING*.

THE firelock of the British infantry is 4 feet 10 inches in length†, the bayonet 1 foot 5 inches, so that when fixed, the musket is 6 feet 3 inches; the whole weight is 11 pounds 4 ounces and a half; the diameter of the bore is $\frac{76}{100}$ inches; it carries a leaden ball, 1 oz. 1 dr. 12 gr ‡ whose diameter is $\frac{0.550}{100}$ of an inch; 29 of them make two pounds; the diameter of the barrel is $\frac{1}{80}$ of the shot §.

The cylindrick touch-hole, which primes while loading, to save that motion in the platoon exercise, and the new ramrod, which, from being equally thick on both extremities, spares the trouble of turning it when ramming down||, are not adopted in the British army. That this

* R. and R. Inspection or Review, part iv. of the line, § 206, B. of M. P. firing by platoons, file firing, pause after firing, regulation in firing, firing in line, attention in platoon officers and covering sergeants.

† The firelock with the bayonet should be about six feet and a half in length, as when so, by adding two feet for the arm, when extended, it will give about eight feet and a half, the common breadth of the parapet. Thus armed, a man will be capable to resist a storm, and be enabled to throw the ascending opponent into the ditch, which with a shorter weapon he will not (Scharnhorst's *Handbuch*, vol. iii. § 11.) Were the musket without the bayonet reduced to five feet, the firing of three deep would no longer be practicable, since the muzzles of the arms of the third rank would not reach beyond the men of the first, which is here indispensable; yet, on the other hand, were the firelock too long, additional weight would result from it, as well as additional difficulty in loading; and when the bayonet is fixed, as the point of equilibrium would be removed beyond two feet and a half, the arm could no longer reach it, and hence the piece not be kept steady while taking aim.

‡ Adye's *Bombardier and Pocket Gunner*, (small arms,) a useful companion, which no military man should want in his library.

§ James's *Military Dictionary*, (firelock.) In a small treatise on firing, I found the following proportions of the balls used by the several infantries in Europe. The English have 14, the Prussians 17, and the Austrian and the French 20 bullets in the pound. As the sheets were printed at Berlin, I conceive it to be Prussian pounds.

|| Those cylindrical ramrods, in addition to their promoting rapidity in loading, remove the awkward motion of turning them, in which the men are apt to interfere with each other, and when in a hurry to hurt their neighbours. When they come in contact, they likewise frequently drop their ramrods, which once down, poor chance is left in the heat of action to think or to have the opportunity of recovering them. The objections which were made against them

must give to those infantries into which they have been introduced, the advantage of keeping up a brisker fire is evident; yet the present English firelock is of a greater range*. Those cylindrick touch-holes, besides, are not unexceptionable, as, by accustoming the men to beat their butts against the ground, to promote the removal of the powder, they gain the habit in the heat of action, to substitute by this motion both the prining and the ramming down of the cartridge,—an irregular practice, which is exceedingly injurious, and most destructive to the effect of musketry†.

The course pursued by the ball is neither the line of aim, nor the line which runs in the continuation of the axe of the bore, but a curve in which the ball, at first under the line of aim, crosses it, and continues to rise till its highest elevation, when it gradually declines again, and meeting the line of aim pursues its downward motion to sink in the ground, or touching it merely, rebounds once or several times, and is thus carried still further by the *ricochet*.

were their weight and bulky appearance; yet these are considerably removed by their merely assuming the conick form on both ends, and keeping the centre part of the slender size as before. This latter improvement is owing to M. Wittenius, a Colonel of dragoons in the Hessian service. Mirabeau's *Monarchie Prussienne Système Militaire*, § 3.

* In this, as in most cases, every nation claims priority, and produces its musket as a model of perfection of the kind; as each agrees, however, to place the French immediately after its own, I should feel inclined to believe, from this concurrence, the instant nationality ceases to operate, that the claim of the French, in this instance, stands on more solid ground. A field officer in the Netherlands' service, whose regiment had been provided with English muskets, remarked, that our firelock was not sufficiently round at the butt; and therefore not favourable to take aim; that as the touch-hole was straight, instead of oblique towards the muzzle, the powder was apt to fly in the face; that the bayonet was not sufficiently fixed; and that the pins which fasten the barrel were apt to split the wood; he admitted, however, its range to be greater than that of those used by the other infantries. Respecting the bayonets, the evil has been remedied in the light battalions (43d, 52d, &c.), where they are secured by a spring, and the contrivance seems to me superior to any of those I saw employed for the same purpose in any of the foreign armies.

The Prussian instructions for firing at the target, promulgated in 1817, conclude by asserting the superiority of the Prussian musket, which, it is said, was, after repeated experiments, found under perfect equality in every other respect, to give the following probability of greater results: namely, of a greater proportion of shots,

Over the old Prussian firelock of,	7
That called <i>noth hartache</i> ,	7½
Over the French firelock,	10
Over the English,	14
Over the Swedish,	17
And over the Russian,	18

† This inconvenience was observed to me by serjeant-major Richewater of the 60th regiment, who had served as a *feldwebel* in the Austrian army in the years 1804 and 1805; and has been since confirmed to me by the Austrian officers, who explained it as the reason why the cylindrick touch-holes had been done away with, in 1806, in the Austrian infantry.

The point where the projectile cuts the line of sight the second time, might easily be removed further by either rising the piece, or if preserving the horizontal levelling, by elevating the hind part of the barrel; but these expedients, by increasing the altitude, and consequently removing the curve described by the bullet, at a still greater distance from the line by which the object is aimed at, must tend to uncertainty in the shot. To this, therefore, attention has been paid in the construction of the fire-arms used by the European infantries, which are so contrived as to prevent the rise of the ball above the line of sight exceeding a foot; and since even so, the philanthropist has to rejoice at the many bullets lost from flying at too great an elevation, what would it not be, were the weapons any way to favour the propensity the men have already to fire too high, which, beside, is particularly to be repressed, as by falling short, a bullet may yet hit by the *ricochet*, but it must be inevitably lost, when it is thrown over the enemy's head. The range might be favourably influenced also in its extent, if the metal be raised at the muzzle, if the barrel be lengthened, or the caliber increased*.

The firelock used by the British infantry, with the ball, as described, and charge of 1st dr for proof, carries horizontally at about 400 paces†, but at such a distance the effect of musketry can but little be

* It was surmised, that by bringing the touch-hole behind, as a greater portion of the powder would be more instantaneously lighted, additional velocity, and consequently a greater range would be obtained; but this, from experience, was found fallacious, as after repeated trials made by General Scharnhorst, (*Handbuch*, vol. iii. § 9,) as well as by the Secretary at War, Ramberg, (*Hanoverian Magazine*, 97th stuck 1781,) it was discovered, that under light charges and similarity in every other respect, no difference was observed from any alteration in the situation of the touch-hole; this has been also confirmed at the experiments made by the ballistic pendulum at Woolwich in 1788, 1789, and 1790, as inserted in Hutton, where it appeared, that with shots of equal diameter, powder of equal strength, under a mean height of the barometer, by firing the charge in different parts, or by varying the weight of the gun to lessen the recoil, or even by stopping the recoil entirely, no sensible alteration is produced in the velocity of the ball.

General Scharnhorst (*Handbuch*, vol. iii. § 8) establishes from experiments the greatest range to be obtained from barrels $3\frac{1}{2}$ Callenberg feet, with a charge of half weight, and bullet of two ounces; he adds, that any additional length in the barrel, or increase in the charge, would afterwards be of no avail; though any retrenchment in length in the former, or diminution in the latter, would immediately operate unfavourably.

The Chevalier D'Arcy found, that in barrels of 40 inches Parisian measure, which amount to 45 Callenberg, or $3\frac{1}{2}$ feet, the least decrease in length immediately unfavourably influenced on the distance the projectile was thrown.

† According to General Scharnhorst (*Handbuch*, vol. iii. § 6,) the greatest range when the barrel is of 40 inches, is obtained with a charge of half the weight of the ball; more powder would be useless, and occasion no additional effect. Were the barrel 50 inches long, $\frac{2}{3}$ of the weight of the bullet would be sufficient; but were the barrel reduced to 35, the greatest distance would then require $\frac{1}{3}$ of the weight of the ball.

When the caliber is heavy, the firelock will seldom admit of this most favourable proportion of powder; as to allow it, without the recoil's being too

depended upon; and although the defensive lines in fortifications are computed to 120 toises, which makes about 360 paces, it is merely at 200 paces, when levelled against infantry, or 300 when acting against cavalry, that any execution can reasonably be expected*. It would be

considerable, it requires the weight of the musket to be about two hundred times that of the caliber. This proportion between the bullet and the musket is even more than preserved in the English firelock.

It was also ascertained by the Woolwich experiments, before alluded to, and inserted in the work of Hutton, "10. That though the velocity of the shot is increased only to a certain point, peculiar to each gun, (a further increase of powder producing a diminished velocity,) yet the recoil of the gun is always increased by an increase of charge."

* Antoni, from repeated trials, discovered the following distances of shots:—

Kind of Arms.	Length of the Barrel, Parisian Feet.	Weight of Ball.	Weight of Ball.	Degree of Elevation.	Distance or Range in Parisian Feet.
	ft. in.	oz.	oz.		
Rifles, ..	3 0	1½	¾	15	2396
.....	.....	..	..	24	2492
.....	.....	..	..	45	2360
Flints, ..	3 3	2	¾	7½	2520
.....	.....	..	..	15	3510
.....	.....	..	..	24	3564
.....	.....	..	..	45	3090
Muskets, ..	5 2	6	2½	15	5244
.....	.....	..	..	24	4602
.....	.....	..	..	45	4540
.....	.....	7	2½	15	4506

From this, it is readily seen, that with a rifle the shot do not go beyond the distance reached by the common musket; as, however, at a remote point, its effect is more certain, it has given rise to the popular saying among the soldiers, that the rifles carry farther.

Guibert fixes the horizontal range of small arms at 180 toises, 432 paces (*Essai Général de Tactique*, vol. i. infanterie, chap. iv. Des Feux;) but he confines its true execution to 80 toises, (192 paces,) and thus far agrees with the writer of the *Tactique de l'Infanterie* (vol. i. livre ii. chap. vi. art. 2,) who, although he at first diverges from Guibert, by extending the distance to 150 toises, when the firelock is kept straight, which, he adds, is the principle acted upon in the permanent fortifications, where the defensive lines of 120 toises, and the width of the ditch 30, make together 150; acquiesces afterwards with him in the principle, by confining the probable effect to 80 toises, particularly in action, where the loading and firing cannot be expected to be very regular.

In the *Instruction sur les Armes à Feu*, an official treatise, chap. viii. the range with common charge is considered about 234 metres (120 toises), and under the angle of 43° 30' the farthest obtainable 974 metres (500 toises), while the greatest effect of musketry is confined within 136 metres (about 70 toises); above 120 toises the fire is explained as uncertain, merely calculated to waste ammunition to no purpose. This alludes of course to the French firelock.

In the following tables (*Scharnhorst Handbuch*, vol. iii. § 16,) the charges were of common powder, and bullets of 1 and ½ ounce, the diameter of the bore was for 2 ounces, the aim was taken deliberately, and the men fired singly.

ridiculous indeed to suppose every shot to carry its man; but when we consider the very small proportion which has any effect at all, we still feel inclined to wonder at it; nor are the considerable deviations here occurring, under cases apparently the same, easily accounted for. A German general, of the name of Von Trew, had a frame constructed*, in which the musket, divested of its bayonet, was, after being properly placed, so fixed as to render all motion, and consequently recoil, impossible; yet the shots still equally varied in their directions as well as their distances, and sometimes reached the ground within 220, and sometimes as far as 368 paces, at their first fall. From these and other trials made by the several artilleries in Europe, the disparity thus experienced in firing was chiefly suspected to be derived from the windage and imperfection of the bullet. Hence the necessity for the latter to be of its true diameter will immediately appear as important; nor can the defect of a proper proportion be here supplied (as some were led to suppose) by employing thicker paper in the construction for the cartridges, as this will merely add fresh inconveniences to those already experienced†.

	Against a battalion.				Against a squadron.			
At 100 paces	$\frac{3}{4}$	..	..	..	..	..	..	hit
200	$\frac{1}{2}$	..	..	..	..	..	..	do.
300	$\frac{1}{3}$	..	..	..	..	..	..	do.

By a table also found in the same work, (vol. iii. § 176,) which is described as deduced from repeated experiments made against a line of cavalry by both persons trained at taking aim, and by the common run of infantry men, the following results were obtained; the firing was by platoons.

	Platoon of trained men.				Platoon of common Infantry.			
From 1000 shots at 100 paces,	534	..	..	..	403	..	..	..
200	318	..	..	..	183	..	..	..
300	234	..	..	..	149	..	..	..
400	130	..	..	..	65	..	..	..

At 250 paces of twelve shots, General Scharnhorst establishes the probable effect, with common cartridges, to be $4\frac{1}{2}$

With press balls $6\frac{1}{2}$

And with rifles, 11

But this appears, however, more than what will generally be obtained. He adds, that by a trial he made himself to ascertain the existing proportion betwixt the musket and the rifle, which consisted of 12 shots at 150 paces, the greatest deviation in the latter did not amount to $1\frac{1}{2}$ foot, whereas, by the firelock with the common cartridge it was five feet. Thus, at 150 paces, a rifle shot may be considered equivalent to two, nay even three musket shots, (*Handbuch*, vol. iii. § 22.) From those results, the propriety of providing the men with a small proportion of press balls will not unlikely suggest itself, as on particular occasions, and where time allows it, they may, if so, avail themselves of the favourable opportunity to secure the benefit which attends their execution: this, by operating at least on the first discharge, will most probably be of no small moment in action.

* Scharnhorst's *Handbuch*, vol. iii. § 17.

† By the Woolwich experiments, already noticed, it appeared, "8. That a very great increase of velocity arises from a decrease of windage; it appearing that with the established windage of one-twentieth, between $\frac{1}{2}$ and $\frac{3}{4}$ of the force is lost."

The effect of windage and imperfection of the ball thus considered as the principal causes of the great variety in the course pursued by the projectile, will readily explain the reason why greater precision is derived from the charges of a press-ball (or of equal calibre as the bore,) and still greater exactness obtained from the rifle; as they are accounted for, in the former removing one, and the latter both the evils complained of; since the press-ball, by being of the same diameter as the bore, must evidently remove the windage, which is the existing difference between the diameter of the ball and the diameter of the bore, and that where fired from a rifle it must equally remove, or at least modify the unfavourable influence otherwise derived from the imperfection in the shape of the bullet; as owing to the particular construction of the rifle, the barrel of which is cut in grooves that run in a spiral, and so that the rais which, at the breech, commence on the right, conclude on the left at the muzzle (and sometimes the turn is even still more considerable), it must give the shot considerable accuracy, from the bullet which, pressed and screwed in it, by turning while in the barrel receives, when driven out, a whirling motion on its own axis, and therefore spins round while it flies forwards. This, by producing its defects and flat parts successively on the opposite sides, right and left, prevents considerable deviation, by constantly counteracting the effect the resistance of the air would have on it, if running straight on: it would always bear on one side, and constantly diverge the bullet from its true course, under the same inclination.

The course of the projectile, the uncertainty in the shots, as well as the range, so far ascertained, we shall now proceed to investigate how often a man may reasonably be expected to fire within a minute, provided he loads his own firelock. According to General Scharnhorst, with the new firelocks, those in which the ramrods equally thick on both ends dispense with the motion of turning them, and the powder falls in the pan while ramming down the cartridge, the man ought to load from five to six times in a minute; and with the common firelock, like those used by the British and French infantries, from four to four times and a half*; but this is more than what can be reasonably expected, as, from the experiments made in Hyde Park, by Lieutenant Russell, it appeared that merely three shots could be mustered within the period alluded to†. It is true, that the slowness of execution at-

* Scharnhorst, vol. iii. § 168.

† These experiments were at the time made under the sanction of H. Royal Highness the Duke of York, and were in 1805 repeated in Jersey, when the same results were nearly obtained. They are amongst several others of the kind inserted in a small volume, published by Lieutenant Russell, the perusal of which will be found both instructive and entertaining.

tracted the observation of several commissioned officers and privates of the Coldstream guards, who happened to be present, and who humourously remarked, that probably in action they would feel inclined to display greater promptitude; but on being called upon themselves, and a serjeant among them being selected to try what he could do, he was not, however, more successful than the rest*.

A quicker execution would evidently be derived, if the cartridge were handed over, or taken from a pouch in front instead of in rear; yet as the latter is the manner in which that part of the accoutrements is worn by all the infantries in Europe, it can hardly be suspected that they would unanimously agree in erring in so material a point; nor can the propriety of the practice admit any longer of doubt, when known, that formerly placed before, they were removed behind during the first campaigns of the Seven Years War, owing to the numberless accidents that occurred at the time, and which were still repeated afterwards, from the men, who, on account of the additional trouble which attends the truly inconvenient motion of looking for their cartridges behind, resisted the innovation by keeping them out of their pouches, and hiding them between their clothes, a contrivance which was carried to such an extent, as to call forth the animadversion of Frederick the Great, who, in a most severe general order, reprobates the unmilitary practice, and threatens with death the defaulter, who, by further disobedience, would thus continue to endanger the life of his neighbouring associates.

From the preceding, the propriety of the following rules will readily be admitted; *first*, that a battalion, within a minute, must provide for a number of shots, at least thrice that of the number of combatants of which it is composed; if, therefore, it consists of 500 rank and file, 1500 shots may be computed within that period; *second*, that all description of fires, not amounting to three shots per man within the minute, must be objectionable, as not producing the full effect and possible mass of fire obtainable.

By the experiments made by Lieut. Russel, at Hyde Park, in 1802.

Charges.	Yards.	Paces.	Disch.	Time.	REMARKS.
				Seconds.	
Of Cavalry,	680	400	3	49	last within 10 yards.
Of Infantry,	250	300	5	90	quite close.
Ditto, ..	300	..	7	..	last within 2 paces.

* The French, who use the old firelock, are, by their Regiment (*Ecole de Mouton*, No. 43,) trained to fire three or four times in a minute. The Prussians, who use the new musket, are said to load and fire from five to six times; yet their officers admitted, that from four to five was nearer to the mark.

Various Modes of Firing.

Notwithstanding the firing being occasionally used to facilitate the attack, or, where an enemy is retiring, applied to throw dismay into his ranks, and promote the pursuit, its character is evidently of a defensive nature, which its missile operation, and the halted position its performance requires, clearly demonstrate; and if it be alleged that troops have been made to load and to discharge their pieces during progress, the feeble execution which accompanies the march, by destroying both the effect of the advance and fire, sufficiently illustrates the truth of the assertion.

The fire, from being principally designed for protection, must be contrived so as by covering the whole front, to deter an enemy from approaching any part of the defensive line. To obtain this purpose, the quickest and heaviest fires are the best; but, as a judicious writer observes*, by the quickest and heaviest fire must not be understood those which make the most noise, but those whose execution, consistent with regularity and order, become the most destructive, and in which the men load properly, take their proper level, and fire deliberately; for, if anxious to destroy their opponents, they fill their pieces in a hurry, and, without any care, still quicker empty them again, what can be expected from such a performance? Like the voice of Stentor, it is a noise, and nothing but a noise. Nay, if soldiers, sanguine in their expectations, consider the enemy annihilated because they have confusedly wasted their ammunition, what must be their surprise, when this very enemy, in defiance of their endeavours, nay, even emboldened from the little he has suffered, is rapidly striding towards them. Such a sight is more than men are capable of enduring, few will withstand it; and the bravest under those circumstances, following the impulse of those less so, may be inveigled into a cowardly flight: nay, from the multiplicity of instances which crowd in support of the inefficacy of firing†, its use has not unfrequently been altogether questioned: it is an axiom almost universally received amongst military men, that

* Baron de Sinclaire.

† At the battle of Castiglione, the Austrians kept their fire till the French approached from 20 to 25 paces, when, with great coolness, they gave a volley on Marshal Vendôme's troops, which by him had been forbid to fire; yet, before the smoke was totally dissipated, the Austrians were broke, numbers of them killed, and the rest put to the flight. At the battle of Belgrade, two battalions, one of the regiment of Lorraine, and the other of Neuperg, fired a volley against the Turkish cavalry, when at about 30 paces, and were immediately cut to pieces; Colonel Neuperg, an ensign, and three or four privates, merely escaped. The Turks, however, immediately withdrawing, and some sentries, at the request of Colonel Neuperg, being planted to save the clothing, the Marshal Saxe, then on the staff of Prince Eugene, employed some leisure time, he had to count the Mussulmen who fell by the discharge of those two corps, and found their number to be only thirty-two. *Reveries*, vol. I. chap. I. art. 6.

of two battalions, the one advancing to the charge of the bayonet, and the other firing on the spot, the latter will, to a certainty, be overthrown. Yet, if the effect of musketry has been sometimes too much depended upon and too much extolled by some, it has been also too much depreciated by others,—a happy medium draws nearer to the truth; nor must disappointed expectations on some occasions throw disregard on an expedient which, under proper management, must generally be beneficial to the utmost. Admitting the prophetic assertion of Marshal Saxe, which the late wars have so much confirmed, that the fate of battles would in future entirely depend on and be decided by the cannon and the bayonet, the use of small arms is not to be despised: if they do less, they still bear their share in the execution, and that this share may be increased seems equally true. What was formerly said of the arrow, that its effect was dangerous but in the hands of those who could handle the bow, becomes here applicable to our modern weapon. To render the musketry fire effectual, the firelock must be in perfect repair, the ammunition good, the flints be well placed, and the men be regularly trained, if not at aiming, at least at a fixed mode of levelling; and not merely individually, but by platoons, divisions, &c. made to execute at extended targets, or spread sails, exhibiting a line of infantry or cavalry, and there, when singly, be carefully taught and explained how to take aim according to the distance and local position of the object in sight*; but when collect-

* From repeated experiments, the Prince of Ligne establishes the following rules for levelling (*Militärisches Vorurtheil*, s. 35.)

When at 100 paces, at the knee.

150 waist (*gürtel*.)

200 breast.

250 beard.

300 one foot higher, and over the head of the enemy.

According to Count Guibert (*Essai Général de Tactique*, vol. i. chap. iv. *Des feux*.)

At 300 toises (720 paces,) about 3 feet above the battalion.

200 one foot and a half.

150 the hats.

100 half body.

50 or 60 knee, or somewhat lower.

He considers the point blank, that where the projectile cuts the line of sight the second time (p. 405,) when levelling horizontally at 120 toises, about 300 feet. However, all what he says here is from supposition, and not from experience. Major Werkamp wishes, from 250 to 200 paces, to fire at the head, and if nearer, at the breast.

In the *Instruction sur le Tir des Armes à Feu*, page 4, it is mentioned to aim till 50 toises (120 paces) distant, at the middle of the body, from 50 to 70 toises at the shoulder, from 70 to 100 at the head, from 100 to 120, from 1 foot to 3 feet above the man.

According to the Prussian *Instruction to fire at the Target*, 1817, (3d period,) from 50 to 100 paces, you are to level at the knee, or about 1½ foot from the ground; from 150 to 200 at the waist, or 3 feet from the ground; at

ed, be accustomed to take mechanically a certain level, which, carefully determined upon, is, when rendered habitual, the safest and most likely the only means the arrayed foot soldiers have to depend upon in their execution when engaged*. Additional expense will here undoubtedly accompany the measure; but how far pecuniary consideration can outweigh the prodigious benefit which would attend such a system of instruction, I leave the financier and soldier to discuss, and the statesman to determine.

An objection not unfrequently started against the exercise at the target is, that a gift of nature, precision in shot, from depending on a certain conformation of the sight, cannot be acquired; but this is a position which experience discountenances, and which must be given up when we reflect, that whole nations, whose peculiar site of country or other considerations, call from their infancy to the use of fire arms, possess the undisputed qualifications of being expert marksmen. There are individuals, perhaps, who never will here attain even mediocrity; and there are others, again, who, the first time the firelock is placed in their hands, will immediately hit, and but seldom or ever miss their aim; but these are exceptions which, both rare, cannot apply to the general run of men who will reap benefit from practice, and from it gain a certain dexterity which, important to their own preservation, will lead to a confidence not reasonably to be expected, where deficiency is felt in this most important particular†.

300 paces, at the breast, or 5 feet from the ground. It is added, that a knowledge of the firelock is here essential, as from its construction more or less deviation from the common rule is in some likely to recur.

* Mauvillon, in his *Influence de la Poudre à Canon*, has so ably confuted the absurdity of attempting to take aim when firing in battalion, and the little use there is to practise the men at the target, for the purpose of executing in body, that it would be needless to attempt adding any thing on a subject he has already so fully illustrated; the necessity he draws from this, of rendering perfectly habitual a fixed mode of levelling, is also too obvious an inference not to admit implicit acquiescence. The act of aiming is the province of light troops; that of mechanically taking a medium level, determined upon, and which is seldom or ever to be deviated from, is that of the infantry of the line. The chapter, which is the third, deserves the careful attention of all military men; and although from the slight the author throws on the charge, a sentiment which too much pervades through that valuable work, some part, like the placing of the shortest men in front on formation, remains evidently objectionable, it is on the whole so sensible, so true, and so convincing, that its perusal will hardly be considered a task. Besides the immediate information that will be derived from it, it will likewise much tend to guard against the danger of grasping too eagerly at innovations, that condemn general practice, and contemplate subversion, without mature consideration.

† The manner in which the ammunition so liberally granted yearly by government, is wasted in some regiments, is truly preposterous, to say no more of it, as it can have no other effect but to reconcile the men to the waste, and to remove that apprehension the recruits at first frequently display to discharge their muskets. Were the latter purpose merely designed, about ten cartridges per man would suffice yearly; but should information be intended, some di-

The various fires practised by the British infantry, are those by battalions, by wings, by grand-divisions, companies or platoons, and by files ; to which has been afterwards added one of two ranks kneeling.

The French* have that of battalion, half battalion, platoons, the one they call of two ranks which is their file-firing, and that by ranks ; of these the two first may be obliqued, but the others are always direct. When they perform by platoons, the fire is always alternate between the two that constitute the division, and which accordingly operate together, the one receiving the command to make ready, so soon as the other has two or three men shouldered in the ranks. This rule is also observed in executing by wings or battalions ; when in the first case, those of the same corps, and in the latter, the neighbouring even and uneven battalions, act in conjunction. These instructions equally apply to the troops of the Netherlands†.

The Prussians have no fractional fire by wings, divisions, or platoons, and confine their performances to the volley, and that they denominate *bataillen-feuer*, which is an execution by files‡ ; the latter is generally preceded by that of ranks. The performance in both is invariably reduced to that of the two front rank men ; those of the first stand fast, those of the second take a pace to the right, while the men of the third fall back one pace, and remain loaded. When the volley is intended, the word of command is given accordingly ; but when the *bataillen-feuer* is designed, after the men have recovered their arms, the drummers, or, if in a light battalion, the bugles, announce the intention, which is then complied with by the men of the front rank, who by themselves, but nearly together, execute, load diligently, and make ready ; and by those of the second, who so soon as those in front stand recovered, fire and load themselves. This is successively repeated by each rank, but so that the men of the same file take care not to discharge their pieces together. On the signal to cease, they all load and remain at the recover. When the musketry is altogether to conclude, the commands *hahn in ruh*, *schulter* (half-cock, shoulder), are given.

The Austrians perform by battalions, half divisions, half companies, by platoons, and by ranks ; which latter generally concludes in a *bataillen-feuer*, the name by which the file-firing is distinguished §.

The Russians execute by battalions, divisions, platoons, and file ; in the two latter the third rank is kept in reserve.

rections appear desirable to regulate it: the instructions issued by the Prussian government in 1817, seem carefully drawn up.

- * F. R. *école de bataillon*, 12—19.
- † I. R. *der N. Bataillons School*, 12—19.
- ‡ F. R. *abach.* 2 kap. 4, § 1, 2.
- § A. R. *hamp.* 1. *abach.* iii. § 1.

In most of the foreign infantries, the men are frequently practised to fire faced about, the rear rank in front ; this is evidently proper, and ought to be adopted in our own army.

To the delineation of these various description of fires we shall now proceed, premising it, however, by the enumeration of the different circumstances which may challenge their applications, and from their utility attempt to deduce the merit in which they stand relatively to each other. Thus considered, we will find the fire liable to be used, 1st. while advancing to an attack, or in pursuit of a retiring enemy ; 2d. while on the spot ; and 3d. thus, while in the act of withdrawing to the rear : and that, under those three cases, it may be, 1st. thrown against infantry, and, 2d. against cavalry ; and also the ground be, 1st a plain, 2d. hilly and uneven, when the troops are on an elevated position ; 3d. hilly and uneven, when they are in a hollow ; as well as, 4th. on the declivity of an ascent ; and that, 5th. the theatre acted upon may be intricate and interspersed with hedges, &c. under the protection of which the infantry may execute its fire.

Battalion Fire.

Thus is called the fire which is executed by the whole battalion at once, on the command of the chief, *make ready, present, fire.* It is simple in its execution, and of an easy, as well as of a regular performance ; whilst it covers the whole front, it is both of a powerful and momentous effect, and therefore capable of making the greatest impression ; by being performed at the voice of a single individual, as the battalion is kept more within controul, it is likewise the least inclined to favour disorder.

This fire seems particularly appropriate when in progress it is intended to intermix the advance, or where it is meant to prelude and act as a preparative to the charge. Should, while in motion, the enemy, by betraying unsteadiness, or symptoms of disorder, divulge his intention of retreat, it may be most favourably employed to decide him to withdraw, and throw him into confusion ; and when so, detached parties may be sent out to take advantage of the disorderly state into which he has been brought. In a defensive position, a line of infantry may, on the spot, likewise seek for security in the execution by battalions.

Firing by Wings.

This mode of performance, which partakes of some, does not retain the whole of the advantages enumerated for the execution by battalions ; its effect, reduced to half, rendering it less destructive. Where a single corps is, or several of them while engaged are, for a certain time to remain stationary, it possesses the favourable feature of admitting more frequent discharges, which may promote confidence. As it is not unfriendly to an orderly process, and admits of a regular execu-

tion, it may, without committing the troops, be protracted for a long period of time. In the field it will merely require, as a further precaution, that in each wing the word of command be given by a different officer. When in a retreat or advance by half battalions, the movement is protected by firing, that by wings becomes of course the performance resorted to as suiting the occasion*.

Fractional Fire of the Battalion.

In firing by divisions or platoons, attention must be had to the second rule noticed, which enjoins the mass of fire necessarily delivered to be never less than that of the battalion, where it executes at once, so that the fractional parts may all have discharged their pieces within the time the whole would have taken up to give a volley and to load again. It was in conformity to this theory, and to obviate the sustaining of any such loss, that it was directed in 1704, by authority, that, when firing by platoons, the men should come to the recover, and the officers no longer wait for each other, but, acting independently, give the words *p'sent, fire*, to their men, so soon as they see their own platoon recovered ready for execution; and the contrivance, far from disappointing the intention, improved so far upon it, that from the motion of making ready being reduced by it, a speedier performance was even derived. But if so far favourable, the fractional fires are also not divested of their objections; they demand an attention hardly to be expected, and which is still essential in them; as otherwise the men, by mistaking the voice of their leaders, and by complying with the orders of their neighbouring commanders, or through the commission of any other neglect, will upset the artificial fabric; and so soon as the regular series is once intruded upon, the utmost confusion pervades throughout. Such fires may be attempted to grace a review, but will be ever ill-suited to the field, where they will soon degenerate into a desultory file-firing, which, without orders spontaneously begun, will not afterwards be easily stopped when required. In a successive formation, where the companies arrive on the ground, the one after the other, this mode of execution by platoons naturally presents its application; and when so, it will commence by that platoon which takes post first, and regularly spread downwards along the line, as it is prolonged. But if performed when already arrayed, and on the spot, it is generally executed from centre to flanks, or from flanks to centre, and by each wing that operates itself independently; yet, unless an insuperable obstacle, like a river, bids defiance to all approach, and the danger of somewhat irregular practices is from it less momentous, its expediency is ever questionable.

* Under this head may also be classed the fire accomplished, while retiring by alternate companies; for although it is not taken by wings, it is still performed by the half of the battalion at the time.

The fractional fire may be usefully thrown to drive off detached skirmishers, against whom the exertion of the whole body would be ridiculous. In the square there is also a description of platoon fire, called alternate, frequently made use of; it consists in the two neighbouring platoons, which, from their situation, involved in the same danger, and provoked to the same defence, are made to perform in conjunction, separately from the rest, and so that the one fires when the other is loaded or nearly so*. But in line it is far otherwise; and as for those complicated executions, where the platoons on the right are guided by those on the left, or those in the centre are to be followed by those on the extremities of the battalion, and where through the line they all in turn perform, in an orderly rotation, with prodigious symmetry, but without any military reference to action or protection, they may, after considerable training, sometimes succeed on a parade, but they will never be called for on service: and from their inability to the field, must their inutility on the ground of exercise be inferred; since the unproductive exertion will merely waste time, and fatigue the troops, to no purpose.

Fire by Ranks.

This fire, which is practised by several infantries, is described both in the Austrian and French Reglements, of which latter, however, not properly a part of the work, it is merely annexed, owing to the frequent use of it which has been lately made.

By the Austrians it is executed by platoons, half divisions, or by battalions†; but that by platoons is preferred; as in the first instance, it provides for 48 successive discharges, and establishes also a better proportion, it is said, afterwards in the *bataillon-feuer* (file firing), by which it is commonly followed. After the caution, the preparative, and the command *fertig* (make ready), the first rank is ordered to fire, and while it is loading, the second directed to discharge the pieces. At the delivery of the appropriate words of the chief, the file performance commences, and is continued, until the drums beat the signal to cease the musketry execution.

According to the French ‡, it may likewise be accomplished by battalions, wings, or divisions. The whole are first ordered to recover, and in doing so the men of the third rank step six inches to the right. Thus prepared, the words are given to the third rank to present and

* By the Prussian Regulations under Frederick the Great, (translation by Faucitt, 1754, Part 8. chap. xviii. No. 4), "All guards, be they ever so small, must be told off in two divisions, that in case they should be attacked by the enemy, they may be able to keep up an alternate and constant fire." Nor indeed, should ever troops intended for action be left unprepared for such a defence and mutual protection.

† A. R. haupt. i. absch. 3. §. 1.

‡ F. R. Supplément Dispositions, contra la cavalerie.

fire, and while in loading, the men of the latter are in the motion of *about*, the second is ordered to perform, and, lastly, the first as the men of the second take the *about*. At the signal of the drum, the whole cease to execute; that by wings particularly, where there are but two or three battalions, is pointed out as preferable. Consistent with French custom, the uneven numbers fire first. When opposed to cavalry, this fire may be performed in the position of charge bayonets.

This fire, which is less powerful than that where the whole of the men perform at once, does not, like it, leave the battalion unprotected, as two, or at least one-third of the firelocks, by it are always loaded; as it affords constant defence along the whole front, and its effect is considered powerful, it is particularly recommended against cavalry.

This performance by ranks is no late improvement, as it is noticed in Montencuculi's Memoirs, and in a manner not unlike to that now practised by the French, described by General Bland*.

* *Military Discipline*, chap. vi. article 4. Firing by ranks.

"To fire by ranks is meant to fire only one rank of the battalion at a time, beginning first with the rear rank, then the centre rank, and, lastly, the front rank. The manner of performing it is as follows:—

"The whole battalion is to make ready at the same time, and immediately kneel and lock, as in the platoon exercise. Then the commanding officer gives the following words of command, *rear rank, present, fire!* As soon as the rear rank has fired, they are to recover their arms, fall back to their former distance, prime, load, and shoulder. After the rear rank has fired, the major proceeds, *centre rank, present, fire!* After firing, the centre rank recovers their arms, falls back, primes, loads, and shoulders. When the centre rank has fired, the front rank is to do the same, which may be done either kneeling, or by making them stand up first.

"In the time that pikes were in use, I presume that this was the method prescribed when attacked by horse, the whole front rank being composed of pikemen, and the centre and rear musketeers. When the musketeers were ordered to make ready, I suppose the pikemen kneeled down, as the front rank does now, dropping the spears on the ground, till the two ranks of musketeers had fired, and then rose up and charged their pikes, remaining in that position till the musketeers had loaded.

"As I never had any experience with the pikes, they being laid aside just when I came into the service, I hope I may be excused if what I have here mentioned is wrong; but as the firing by ranks, both in the battalion and the square, was practised a considerable time after the pikes were gone, I presume from thence that it was their method, and retained by the old officers, who laid a great stress upon it, as the most effectual way to secure them against horse. But this is not to be wondered at, since it is natural for all mankind to be prejudiced in favour of the first notions they receive, or customs which they have long used to; however, it is seldom or never used in service, though sometimes practised in the exercise; but another method is substituted in its room, which is that of saving the fire of the whole front rank of the battalion to the last, and firing the two rear ranks by platoons, it being the compact fire which does the execution requisite to break a squadron; whereas the fire of a single rank is so thin, that it will not easily stop their progress, if their resolution be not failed them."

In inserting this description, with the observations of General Bland, I have the two-fold design of displaying the tactics of the day, as well as to show how inefficiency in professional knowledge is apt to hinder in military affairs;

File Firing.

Marshal Saxe, who held the execution of musketry in no great estimation, in selecting the few occasions in which he deemed its application more appropriate, points out that by files as the best adapted; and it will be readily allowed, that if gone through with care, it displays under particular instances, where local protection, like an hedge, an abbatis, favours it, advantages not repeated in any of the other modes; yet, at the same time, its application is always precarious, from its tendency to hurry, that is apt to lead to disorder, and which, if once crept into, will most effectually debar it of the great and only benefit designed to be derived from the single performance, namely, to give the men a fairer opportunity to take aim, and of firing deliberately the instant their eyes have caught the object levelled at. But so little on this head can be reasonably expected, from the common run of soldiers*, that, considering the degree of coolness it requires, even where expert at firing, and the unfavourable time in which, and unfavourable circumstances under which, it is now required, it is not surprising to find the disrepute in which the file-firing altogether fell with military men of the greatest reputation. General Warnery admits no execution to be better calculated to terrify and frighten sparrows than that by files; but he thinks that men and soldiers will require something less inoffensive, and from experience deduces its frequency of failure.

Among the arguments alleged to depreciate this mode of performance, we have selected the following:—That they will amount to complete prohibition of its application, will hardly be admitted, but that they will restrain its use, and render cautious when and how to employ it, there is no doubt.

First. It is observed, admitting the attention in the man to be exemplary, which in it is imperative, and the desirable execution to result from it, that its effect, from being spread along the whole surface, will still be divested of due impression; and here General Rogniat, who seems not inclined to discountenance this mode of performance, admits, that although, if continued, the file firing must be destructive, it will still fail from operating on the mind of the antagonist, as it does not

for as fashion can evidently not operate, and render a mode of execution at one time more destructive than at another, such a rejection of the firing by ranks at one period, and re-admission afterwards, must display error somewhere, and betray uncertainty. In all what relates to the military science, but particularly what belongs to the fire-arms, careful experiments, confirming principles deduced from sound reasoning, can alone lead to a safe determination; for in the field of action, where adventitious causes continually operate, and no time is left to discriminate, nothing positive can be ascertained; and if it be attempted while the premises are so unknown or uncertain, erroneous inferences must be expected to be drawn as conclusions.

* The impracticability for the troops of the line to attempt at aiming, while firing in body, has already been noticed in note, p. 24.

produce that surprise, that panic*, solely capable to influence and determine an opponent to relinquish contest. It is not a few men falling here and there successively, how great soever may be their aggregate number, that will strike terror, and involve into a flight; but it is where havoc is observed, by a number that, falling at once and about the same spot, leave a chasm not to be replenished, which acts on the senses, and fills the mind with the impression of danger.

Second. It has been urged, that from being left unconstrained, the men give way to hurry, load badly, fire worse, and waste their ammunition, as well as heat their firelocks, without any adequate result.

Third. The smoke which it occasions, is, with no small propriety, adduced as unfavourable to aiming: and, lastly,

Fourth. Which is perhaps the strongest objection of all, that by it the men are elevated to such a pitch, and driven to such a state of confusion, that all obedience is lost; the voices of the officers are no longer heard, and that, deaf to all directions, the chief is no longer master of his battalion, and no more capable to stop the noise than to perform any immediate requisite evolution. Thus inclined to favour unsteadiness, the file firing must always be viewed as accompanied with more or less danger; and as it requires great caution for admittance, it demands no less attention in performance.

Fire of two Ranks kneeling.

The fire of two ranks kneeling is explained as follows, in the Instructions for the Manual and Platoon Exercise, issued in 1804. The officer gives the word *ready*, at which the men sink down, and then *present*; when every man, in fixing upon an object, aims and fires at it on his own accord, without waiting for any further direction. The due pause after discharging the piece attended to, the word *load* is heard, when the men all load their pieces, and resume, after accomplishing it, the position of making ready, thus to wait for the word *present*, which is delivered by the officer as soon as the whole has recovered, to fire again. On the signal to cease fire, the men stand up and shoulder.

This mode, which is chiefly designed for light-infantry, may also apply to all kinds of foot soldiers, where, on the slope of a hill, it is intended to level against troops posted in a valley, as by lowering the pieces, it renders the fire more *razant*, while at the same time it reduces the target they offer to the opponent by half, an object, which a view of the tables exhibiting the effect of artillery or musketry on targets of different dimensions, will clearly evince to be of no small moment. This advantage should not be neglected, therefore, whenever,

* *Regniet Considérations sur l'Art de la Guerre*, chap. vi.; also, chap. v. "Mais il n'étonne, ni n'ébranle point l'assaillant comme des décharges soudaines."

like in the present instance, from the elevation of the ground, or where intervening obstacles thwart an easy approach, such a reduced position may be indulged in with safety.

Execution.

In the performance of the fires, the British Regulations enjoin the following attentions.

First. The fire is invariably to commence immediately at the word *halt*, or, if retiring, on the command *halt, front*; for as the troops are to be apprized of the description required before and while still on the march, no improper delay is to take place; nor is any time to be lost in dressing, which, if needful, must be postponed until the musketry execution is concluded.

Second. All fractional fires of the general line are executed separately and independently by battalions, each by itself.

Third. The pause to be made between the commands, *make ready, present, fire*, whatever may be the extent of the body it is meant for, must always be the same, and equal to the cadence of the ordinary time, the 75th of a minute.

Fourth. In firing, no flugelman is ever to appear in front, this being incompatible with service.

When the whole battalion fires at once, the caution *battalion* is followed by the words *make ready, present, fire*, all delivered by the battalion chief. The men come to the shoulder after loading*.

In firing by wings, the commands and the performance are alike as for the volley; only, as it is but one half which is here designed to execute at the time, the words *right* (or *left*) *wing* is substituted in the caution to that of *battalion*.

In the performance by the fractional parts, for instance, by grand-divisions, the preparatory instruction, *the battalion will fire by grand divisions, from right to left* (or *left to right*) is heard, when the *preparative* is beat†. On the last stroke of the same, the officers in command

* The Austrians and Prussians, as well as the Russians and the Danes, whether they execute by battalions or smaller parts, invariably recover their arms after the first fire. This has the advantage of uniformity, and of securing a quicker performance. Were, for instance, two battalions to act against each other, and in every respect to be alike, but the one to shoulder and the other to recover, the latter by it would be enabled to precede the former in its second discharge, which is obviously of moment.

† *Preparative* is called the signal the drum or drums give to commence the fire; the beat which is heard for conclusion of the same is called the *general*.

From my own observation, the Russian battalion commander appears, while firing, to be accompanied by two drummers and two fifes for the necessary signals; this is a better contrivance than where only one drummer is so employed; but the practice of the Austrians, where the whole of those belonging to the battalion (or line) are made to beat the preparative to commence, and the

step out one pace, to face towards their divisions*. The one directed to commence the fire, at once pronounces the words, *make ready, present, fire*, while the others in turn successively repeat the same, observing to preserve the ordered interval to be left between the delivery of the word *make ready*, and the fire of that preceding, which is required to give time to the first grand division to be reloaded, when the men of the last have discharged their pieces, so that the performance may be kept up without intermission†. The men also here, after filling

general to cease the fire, at a signal given by the battalion-chief, and do continue to roll, until by a second sign he stops their performance, still pleading eligibility, as it is less apt to be mistaken, and impossible to be unheard.

The French also make the whole band of drummers perform the *roulement* to discontinue the effect of musketry; they have no preparation for their tractional fires, which all begin at the command they are each directed by. The British have a preparative only, when the words for the delivery of the fire are not confined to the field-officers; when they are so, like in the volley of the battalion or execution by wings, they have none. By the Austrians all discharges of musketry are so preceded. Both the British and the Prussians, as well as the French, have a preparative when firing by files. The rules I would venture to propose on this head, are :

First. To adopt the British manner in restricting the preparative, as well as the general, to the fractional (grand division and platoon) and file firings.

Second. That whenever required, at the signal of the orderly drum, they should be repeated by the whole band of drummers; and,

Third. That should the constant recovering of the firelock after loading be established, to fix a short roll, while filling the musket, as apprizal to shoulder instead of recovering the arms; the utility of the latter exception, an immediate advance after a volley will suggest.

* In some regiments, at the last stroke of the preparative (or what is still better, at the caution), the officers in the front rank repair to the rear, and in joining the supernumerary rank, take post in the centre of their commands. This, as the words are better heard, must facilitate their obedience, and give a much greater opportunity to the officers to watch their men, than if brought to the front, the position in which they are generally placed.

In the French infantry, when firing by platoons, the platoon chiefs remove two paces behind the supernumerary rank, opposite the centre; but where the execution is by battalions, wings, or *seux de deux rangs*, as they have no command to deliver, they only fall back one pace to the rear of the rear rank, opposite their proper place, *créneau*. Covering serjeants invariably, in all firing, step back into the supernumerary rank, opposite their places in the line, *créneau*.

According to the Prussian Reglement, absch. 3, kap. iv. § 1, at the caution, the platoon chiefs fall back into the third; and their coverers into the supernumerary rank: at the hearing of the words *half-cock, shoulder arms*, they resume their proper stations.

By the Austrians, all *chargen* (officers and non-commissioned officers in the ranks) delivering words of command, remain in the ranks, but face to the right or left towards their men, while those who have no words to give (and which is consequently all of them when the battalion executes at once) face about to step into the third rank, where they front again. The colour-bearer takes post between the two corporals, and all coverers fall back two paces to the rear.

Among the Danes, in all musketry execution, the platoon chiefs are behind the second file from the right of their men; and in the Russian infantry behind the centre of their platoons.

† Those intervals, which are called pauses, are equal to the ordinary time, 1-75th of a minute; they vary according to the number of grand divisions

their firelocks, return to the shoulder, which position they also gain after loading, when the general beats, which is the signal to cease fire. On the last tap of the latter (which might be delayed somewhat, to ensure uniformity in the obedience,) the officers who faced their men, resume their positions in the ranks, as well as those in charge of the left companies, who, as they had no commands to deliver, fall back in the supernumerary rank at the preparative, and now resume likewise their stations in the alignment.

In firing by platoons, unless it be connected with the successive formation, when it follows the current in which the divisions take post, it is generally confined to the double execution of firing either from centre to flank*, or from flanks to centre, by wings, that each by itself operates independently. After the caution†, and on the last tap of the preparative, the officers in the front rank, and in command of platoons, step out to face their men, the two of each wing that are ordered to begin, without losing time, instantly utter the commands for execution, and are followed by the remaining, as explained where it recurs by grand-divisions. The attention to leave the necessary pause betwixt the firing of the last, and the command for the next, is here equally required; the words of command are, however, now somewhat different, and contracted to *ready, p'sent, fire*, for the first time, as afterwards from the men who take up the recover, instead of the shouldered position after loading: whenever they fire by platoons or files, they are still reduced to merely *p'sent, fire*; the first *ready*, the position of which is already assumed, becoming now superfluous.

When the companies thus operate, and the wings consist of five, three pauses between the fire of the preceding, and the word of command to the next will be sufficient‡; but if the performing body be reduced to four, the same number will hardly answer; and were only three platoons to compose the wing, it is better for the fire to go through the whole, which, as their number then amounts to six, will

performing. Were they, as formerly, five, as the command for each will take up 3-75ths, three additional pauses between the firing of the preceding and the making-ready of the next will suffice, as the battalion will then have fired through in about 27-75ths of a minute, which is somewhat more than its third, the time precedently established as taken up to fire a volley, and to load again. When only four grand divisions thus operate, the whole, under the same arrangement, will have concluded in 21-75ths, which, taking into consideration the three pauses left between the firing of the last grand-division, and the second discharges of the first, will still permit the execution to be kept up; but the intervals must increase to six, when merely three thus perform to obtain the appropriate proportion by it, as the whole will then even have gone through in 21-75ths of a minute, which is by no means too much.

* The caution is by platoons or divisions, fire from centre to flanks, or from flanks to centre.

† The late Regulations said here two, but this is rather little, as it only affords 23-75ths, and it directs three for five grand-divisions.

render a single pause adequate to complete the purpose of providing for a constant execution*. Yet this, when acting by platoons, must be understood for the first round, since after it, no regard is paid any longer to the neighbouring companies, and every one, at the voice of its own leader, performs as soon as ready; the leader delivering the command *p'sent* the instant he perceives all his men recovered. At the *general* to cease fire, the soldiers in the act of loading conclude it, and shoulder their arms; but those recovered remain steady, till they, receive from their platoon officer the words *half-cock, shoulder arms*, which having complied with, the officer himself regains his station in the ranks†.

* From what is said in note, 198, 199, when the wing consists of five divisions platoons, by allowing three pauses, the fire will run through in 27-75ths of a minute; and where it consists of four, in 21-75ths, which hardly provides the time for the first to be reloaded: were, therefore, the number of companies in a wing reduced to three, it will no longer admit the double performance by half battalions independently, and become eligible to execute through the whole corps from flank to flank, with one pause to be left betwixt the firing of the last and the word ready for the next; the battalion will then have thrown its fire in the 23-75ths of a minute, which is something less than the third.

† The necessity for this last stroke of the general to be delayed, as noticed, appears here more striking, from the additional direction to *half-cock* and *shoulder*, to which a part of the officers are subjected before they can resume their stations in the ranks.

Unless where the formation is successive, when the fractional fires run the course the divisions take post, those partial discharges, by the Austrians, always take place independently by divisions, that each operates by, and within itself from both flanks to centre. For instance, if it be by *zug* (platoons), as there are twelve in the division, the progression to be kept up the first time among them is as follows.—1, 12, 2, 11, 3, 10, 4, 9, 5, 8, 6, 7; the right platoon instantly performs as the signal of the drum to commence concludes, and the next, the left one, follows, leaving a pause from 1 to 3, and so on, to provide the time, says the Regiment, for the first platoons of the divisions to be reloaded and recovered, when the men of the fourth *zug* discharge their pieces. After the first round, this succession disappears, as each *zug* by itself fires as soon as ready, at the word of its officer, who, in giving the command, is merely to pay some attention not to fire immediately with the platoons next to him. When the fire is taken up during a successive formation, as no *preparative* is heard, (haup. 2, absch. xiii. § 4,) each platoon, half-company, or half division (which latter front is the utmost allowed to operate by on those occasions) executes as soon as the second beyond it is fixed on the line. The fire runs then from flank, to flank or from the centre to both flanks, or perhaps from both flanks to the centre. Were the body, previous to its taking up the alignment, in file or double file, the preference is given to the execution by platoons, or that of half-companies: in those performances the rear rank does not fire, but remains recovered. The execution ceases at the signal of the drummers.

The platoon fire of the Danes is, like that of the French, confined to the alternate, in which two act in conjunction; the left one performs when, in that on the right, the men, in the act of loading, are bringing their arms about. In the first discharge the companies, Nos. 1, 3, 5, 7, perform in a quick succession, so as to permit the four shots to be heard distinctly.

When the Russians fire by divisions, in which the following gradation is kept up, Nos. 1, 3, 2, 4, the battalion-chief delivers the words to each; but when

When firing by files, every company or division operates by itself. On the *preparative* that follows the caution, the men of the right hand file in, each make ready, present, and fire; and observing the two pauses ordered to precede the loading after discharging the firelocks, go through the motions of the same, and take up the recover to fire again. On the first file presenting, the second makes ready; and on the second presenting, the third makes ready, and so on till all the men have discharged their muskets. Yet this is merely intended for the first round, as afterwards they are no longer subjected to any restraint or connection with their next neighbour, but allowed to execute whenever and as often as they have filled their firelocks, and have taken up the recover. Those in the rear rank, as much as circumstances permit, are yet recommended to be guided in their motions by their file leaders, and to perform with them*. When the *general* is heard, the men in process to load complete it, and shoulder their arms, while those who stand recovered, half-cock, and join the same position.

The manner of the Danes is not dissimilar to that described for the British; the next man likewise makes ready when his neighbour presents, and presents when the same neighbour fires, and this is also with them restricted to the first round; after which, without any further regard to each other, every one by himself discharges his musket as often as it is loaded. Yet, instead of by companies, the first round is confined by them to sections, of which the right-hand files are all immediately to execute on the *preparative*.

By the Russians, the whole recover on the signal of the drum to commence, and the performance is then carried on by four or five files that co-operate together. The second man fires when the first, in the act of loading, brings his firelock in the about-position; this the third repeats with regard to the second, and so on till the execution is gone through. After the first shot, every man immediately performs the instant he is ready to unload his musket.

The French, who call the file-fire *feux de deux rangs*, from the third that takes no share in the performance, operate somewhat differently from any of the modes precedently described. When the three ranks have made ready, the first and second rank men of the right file in each

it is by platoons, their leaders are those who, from the rear (where they have removed) pronounce the commands; the succession is then 1, 3, 5, 7, 2, 4, 6, 8; but this complicated progression is immediately neglected after the first round, when they fire so soon as their muskets are ready.

* This, which is mentioned in the late Rules and Regulations (part iv. § 206, No. 6,) stands, if I am rightly informed, in immediate contradiction to the direction the Prussian soldiers receive; as according to what I am led to understand, the man, when in the second rank, is as much as possible ordered to fire when his front rank man loads, and to load when he fires; this, which coincides with the instructions given to our light infantry, is apparently more reasonable.

platoon are directed to commence the fire, which runs successively through, by each following file firing when that preceding primes (*amorceras*.) But this is again merely confined to the first shot, as every individual after it executes by himself, without minding either his neighbour or the man in his front. Those of the foremost rank accordingly load, take up the recover, present, and fire, and so continue; but those of the second pass their firelocks with the right hand to those of the third, who receive them with the left, and give them their own (which are loaded) with the right hand. On receiving the firelock of the third, the man of the second rank fires a second shot with it, and filling it himself, gives a third, and then returns it empty again to the soldier of the third rank, to exchange it with his own firelock which the third rank man has loaded again; with it he executes a fourth time, loads, gives a fifth shot, and changes again his arms. By this means the front rank men fire, and fill their pieces alternately, but those of the centre rank fire twice to load once, while those of the third are altogether employed in charging the firelocks for the men of the second.

At the signal to conclude, *roulement*, they all load and shoulder; and those of the second and third take back their proper arms, if not already in their possession*.

Firing while advancing.

Under this head we shall not attempt to rescue from oblivion those intricate modes of performance, in which the troops were made to advance in small parts, and to load while on the march, which, most difficult on a parade, impracticable on service, have so deservedly been expunged out of the infantry exercise†, but confine our delineation to

* F. R. Ecole du Soldat, 174-183. Ecole de Peloton, 50-56.

† To give the reader an idea of those complicated manners of firing here alluded to, and which formally engrossed no inconsiderable share of the time bestowed in the instruction of the infantry, an advance and a retreat by platoon, as explained in Bland, and an advance of still later date, as inserted in Saldern, are here included.

How to fire by Platoons advancing.

“ Upon the commanding officer's ordering the drummers to beat a *march*, the whole battalion is to march straight forwards, beginning with their left feet, and to move as slow as foot can fall.

“ When the battalion has advanced a little way, the *preparative* is to beat, at which the platoons of the first firing make ready, the two first stepping briskly forward three good paces, and the front ranks coming down at the third.

“ The officer commanding the first platoon then begins, and gives the word to present and fire as before. When the first platoon fires, the third is to lock; when the second fires, the fourth is to lock; when the third fires, the fifth is to lock; and so on through the whole battalion, every officer taking care to have at least an interval of one platoon between his firing and that of the platoon next but one before him.

two methods of advancing and retiring under the protection of musketry, which, used by the Austrian and French infantries, are inserted as such in their Regiment.

"When the fifth platoon of the first firing fires, the second firing makes ready, the first platoon of which, at the same time, advances and locks; and is followed by the remaining five platoons of that firing, in the manner directed for those of the first firing.

The same is to be observed by the third firing, when the fifth of the second fires.

"When the fifth platoon of the third firing has fired, the first of the first firing locks again, in order to begin the second round, and so on; the fire being continued till the commanding officer order the first part of the *general* to be beat, at which it is immediately to cease; but the battalion is still to step advancing, as long as the *march* is beat, the ceasing of which is the signal for it to halt, as has before been observed."

How to fire by Platoons retreating.

"The battalion having thus gone through the firings by platoons *advancing*, the commanding officer orders his drummers to beat a *retreat*, at which the whole goes to the right-about, and marches with a very slow pace to the rear.

"The battalion having marched a little way, the commanding officer orders a *preparative* to be beat, upon which the six platoons of the first firing make ready, and the two first to fire come to the right-about and lock.

"As soon as the first platoon has fired, the third comes about, &c. When the fourth platoon has fired, the second firing makes ready; and as soon as the fifth platoon fires, the first of the second firing comes about; and so on as before.

"When the battalion has thus fired *retreating*, as many rounds as the commanding officer shall think proper, he orders the first part of the *general* to be beat and when the drum ceases beating the *retreat*, the battalion halts, waiting that position for a *flam*, which is a signal for the whole to come to the right-about again, to their proper front."—Bland's *Discipline*, 9th edition, (Faucitt,) chap. vi. art. 3.

In advancing by Platoons.

"All the above rules remain, except that the officer, instead of '*Toon, ready*, commands '*Toon, march, ready*. There should be left no more time between these words of command than is necessary for the soldiers to perform the following without hurry."

"The officer of the following platoon gives the word, '*Toon, march*, when his leader makes the third step, which he can measure, even if he does not see him, (being obliged to look at the colours), by counting upon the word of his leader, *march* 1, 2, and instead of 3, gives the words '*Toon, march*."

"3. The officers of the second should, upon the third step of the seventh, give the word '*Toon, march*'; but it would be perhaps requiring too much if this should be scrupulously performed; it is enough if he moves at the making ready of the seventh, which must be done when the fifth presents, or, which is the same, when the third has fired. Consequently, he will not be out when he gives the word, whether it be at the firing of the third, or the presenting of the fifth.

"4. The officer of the first platoon must begin to give the word the second time, when the officer of the fourth has fired; so that he meets with the present of the sixth, and with the make ready of the eighth. But both must observe, before they present, the second platoon to wait for the fire of the seventh, and the first for that of the eighth.

"5. The *feldwebels* (flag sergeants) are to remain during the firings, as well as every soldier, both in *advancing* and *retreating*, at the cadenced step, of which 76 are made in a minute, and to take care that the heel does not come either more before or behind than the joint of the great toe.

Beginning with that of the French, as the caution is given*, the uneven battalions of the line are advanced 30 paces in the quick cadence; when halted, they are made to fire, to load, and put in motion again at the accelerated step to regain the even ones, which, undisturbed, have pursued the march at the ordinary pace, and have passed by while they were loading. On their coming up to them (the even), they resume the slow cadence; and the even battalion (as the uneven come up to them), are in their turn quickly brought forwards 30 paces to perform as the uneven did, and successively halted, ordered to fire, to load, and quickly to regain the uneven, which, in their front, are proceeding in the slow march; this cadence they likewise take up on their joining the latter, when the uneven are again brought forwards. Thus is the alternate advance and fire pursued, till the signal for discontinuance puts an end to the evolution.

When this fire is applied during a retreat†, on the appraisal directing it, the uneven battalions are immediately halted and fronted; and firing, they are, after loading, faced about, and at the accelerated cadence brought back to the even numbers, which all the time at the slow pace have marched to rear. As they join them, the uneven battalions take up the ordinary step, whilst the even battalions in their turn halt, front, fire, load, face about, and performing as explained for the uneven corps, as they come up to the latter resume the slow cadence: the uneven then again halt, front, fire, face about, &c. and so on‡.

Those fires, both when advancing and retiring, are concluded by a short roll, which, ordered by the chief, is taken up and repeated by all the drummers of the line; when heard, the corps after loading, as they are to the front or to the rear of the battalion of direction and intended alignment, accelerate their pace, or mark time, to promote the speedy recovery of the line.

* 6. The platoons must advance three common steps, without overstepping them; because, otherwise, they never would advance in a straight line; neither must they make them too short, because they would then fire from behind the colours.

† 7. For the falling-in again, four or six men must not be waited for, because they are by this means accustomed to move quicker; the left file leaders of the four platoons must be told that they must come in by the left of the colours. This must be understood of the four last, which the officers must do without being told of it.—Saldern's *Tactics*, translated by Landmann, part i. letter C.

Some more performances of the kind may be met with in the same works.

* *F. R. évolutions de ligne*, 369—377.

† *F. R. évolutions de ligne*, 397—403.

‡ The execution is here still easier when retiring than when advancing, from those preceding the battalion for the preservation of the perpendicular not being in the former obliged to fall back in the ranks, but throughout enabled to preserve their detached situations. To insure still greater precision, they may even be dispensed with to face about with the rest of the battalion, and remain fronted to the rear while engaged.

According to the Austrians*, the regiment of three battalions in line, whether halted or on the march, is, on the cautionary command enjoining this fire, immediately to take up the quick step in order to advance 100, or as many paces as may be deemed requisite. When halting, the drums beat the *preparative*, on which the officers and non-commissioned officers repair to their firing positions, and the command to perform by battalions is delivered first to the second, then to the first, and lastly to the third, and so timed that the volley of the last precedes the making ready of the next. This execution is in the same rotation repeated until the drums give the roll to withhold the fire, when, after shouldering, the line is quickly removed 100 or more paces to the front, and thither arrested again to repeat the fire by battalions in the manner explained.

Were this intended while retiring†, the movement takes place in the chequered position. The whole, therefore, supposed on the march to the rear, the commander of the second halts and fronts his battalion, and after his drums have given the signal, pronounces the command, *fertig* (ready), for the whole, and then firing by ranks repeats the words *erstes glied an, feuer, zweytes glied, an, feuer*, (first rank, present, fire; second rank, present, fire,) which complied with, the drummers beat to cease execution, and the men of that second battalion load, shoulder, face about, and are quickly brought 50 paces to rear, where, on arrival, they halt, front, and make ready to protect the retreat of the first and third battalions, which have both fronted as the second faced about to march off, and have fired by ranks as it passed by, and, now as it is halted again, cease firing at the signal of the drummers, shoulder, face about, and, in the quickest cadence, repair 100 paces to the rear of their ground, 50 beyond the second battalion. The latter, as the two in front (first and third) have passed by, renew the performance by ranks, to keep it up till those two corps have taken post in rear, and have halted, fronted, and made ready, when concluding its musketry execution, the men of the second load, shoulder, face about, and quickly step 50 paces beyond the first and third, which, as before described, protect its retreat. This is alternately repeated, till a roll of the drummers gives a signal for the line to be reformed. Where two battalions thus operate, the right one retires first.

Fire proposed by Count Bückeburg.

The Count William Von Schaumburg Bückeburg proposes‡ a peculiar mode of firing, in which the battalion brought in six ranks or up-

* A. R. haupt. 1. absch. viii. § 1.

† A. R. haupt. 1. absch. viii. § 2.

‡ Scharnhorst's *Handbuch*, vol. iii. § 175.

wards, is made to kneel down, and is divided into three or more divisions or fires (as they may be called), each consisting of two ranks. At the *preparative*, the last division gets up to make ready, present, fire, and immediately sinks down again to reload; as the last drops, the next rises to execute in the same way; and this is performed in the like manner by that in its front, till the first and second ranks, which constitute the last fire, perform conclusively.

When six deep, this will allow three, and where eight, four successive discharges; in the latter case, by establishing three pauses between the performance of the last and the making ready of the next, as it enables the fourth division to be prepared when the first has unloaded, it provides for a constant defence along the whole front, which is then protected by a volley of two ranks every $\frac{6}{75}$ ths of a minute. As eight ranks will here have discharged the contents of their firelocks within the time the battalion, under its greatest exertion, delivers a volley and loads again, the mass of fire is obviously increased in the proportion of 8 to 3.

This manner, which is evidently designed when stationary, leaves great room for criticism. Where a river or other obstacles thwart all possibility of close contest, and the musketry, alone to be depended upon, is to be kept up, it may, however, meet with its application: something might also be borrowed from it when opposed to cavalry, as we shall see in the following

Conclusion.

An observation adverted to, but which seems still well introduced in the present instance, from its tendency to lead to decision in the proper employment of the various modes of firing described in the preceding, is the operation and effect produced by musketry to be immediate, and not protracted; and consequently to result from the first discharges, which, if ineffectual, little is to be expected from those following. This admitted, those first discharges, from being so important, must be made as powerful as circumstances will admit. Thus far, no execution answers so well as the volley, which, performed by the whole, possesses, as we have already noticed, the advantages both of procuring the utmost number of shots, and, from its sudden and decisive effect, of leaving the strongest impression of danger on the mind of the opponent. Thus enhanced in estimation, the excellence of this fire would supersede the whole of the remaining modes of performance, were other causes, besides those mentioned, not occasionally to influence*. To such a

* The principal considerations to be kept in sight, while firing, appear:
First, As the great effect of musketry results from the first discharges, those first discharges ought to be made as powerful as possible.

simplicity, therefore, the art of firing cannot be reduced; as frequently more than required, the battalion execution, from leaving the troops unprotected, would sometimes provide for more than what can safely be allowed. Hence, numerous opportunities still remain, in which the successive performance by wings, grand-divisions, platoons, ranks and files, may meet with their appropriate applications; but to point out the exact case to which each belongs, and to define the precise limits in which each should be circumscribed, is a task, which, from the variety of circumstances that might influence, and must ever modify, decision will always be difficult, and is still rendered more so from the discordant opinions advanced and supported on this head, and the no less discordant practices of the infantry in Europe, which evidently betray indecision. That the ground has been cleared of late, and weeded of those intricacies which encumbered it formerly, cannot be denied; but that it still requires to be amended, the vacillating course pursued also evidently asserts. Thus we see the same description of fire extolled by some, depreciated by others; sometimes produced as the most destructive, and sometimes rejected as the most ineffectual. We hear a great deal *about* aiming, and we see very little *done* to make the soldier expert in firing*. We are told by some military

Second, The effect of musketry, from depending on the mass of fire provided for, must render those modes of performance which admit a sensible decrease, objectionable.

Third, As the effect produced on the mind must be constantly kept in sight, the firings of a description to terrify the enemy, and elevate the spirit of your own men, are of evident advantage.

Fourth, Another consideration is, how far the mode of execution employs the attention of the men; as the more they are kept busy, the more will their minds be diverted from the apprehension of danger.

Fifth, Whenever successive attacks are suspected, particularly where acting against cavalry, owing to the velocity of that corps, troops are never to be left defenceless; the discharging of the whole of the firelocks at once and together is, in those cases, at least imprudent, and frequently fatal; and the constant retaining of a part of the fire, ready to act if required, absolutely necessary.

Sixth, When opposed to cavalry, the nature of the animal must be taken into account, as well as that of the man; and the panick of the horse be taken into consideration, as well as the impression on the rider.

* We have already mentioned aiming to be the art of the light infantry man; and the habit of taking mechanically a certain determined level to be that of the ordinary foot soldier, when acting in body. Should somewhat of a proper position be here devised, and the men be accustomed to take it, without ever deviating from it, the object proposed would be attained. The French soldiers, when in the ranks, are instructed to direct their pieces at the breast of their opponents; and the Austrians, who when detached are taught to consider both the distance levelled at, as well as the curve described by the ball, are, when in platoon, told invariably to aim at the middle of the body. But aiming here is out of the question; as the confusion and hurry which must more or less prevail amongst the most regular and orderly troops, the constant disturbance the man experiences from his neighbours pushing him, the thought of being fired at, as well as of firing against, and except in the very first discharge, the smoke will all

men, impressed with the immediate consequence of a sudden and powerful effect, that the execution in three ranks cannot be relinquished: we are assured by others, again, that the fire in three ranks is dangerous or impracticable; and while amongst the former, who maintain its efficacy, a discussion ensues whether those three ranks are to fire standing, or the front rank to kneel down; the latter insist that the preserving of a third rank in reserve is infinitely more within the dictates of prudence. Thus, amongst a variety of sentiments, often contradictory, and sometimes in diametrical opposition to each other, we are left without a guide; and, from these multiplicity of opinions, compelled to draw conclusions, which, apparently reasonable, would be more satisfactory were they also confirmed by experience*.

concur to thwart any attempt of the kind; and the most expert marksman in the ranks will pop off his shot like the rest, where chance leads it. It is a level mechanically taken, without knowing it, which is here required. Were the men ordered to throw their sight at some distance on the line, which parallel to the ground runs through their middle, while they, from the recover, take up the present, and accustomed to take up this position at once without lowering the head, this in itself would perhaps draw nearer to the intention; most likely but a slight deviation from the existing practice, would suffice to establish what is here designed and desirable, or at least attainable.

In instructions some years ago delivered to the light infantry, (I believe by General Mackenzie,) the men were directed to gain the present, not from the recover, but from a position in which the firelocks were placed, in a manner not unlike to that they are brought for the charge, so that the arms were gradually raised, instead of at once put down. As those orders were designed for light troops, and aiming was the intention, the General was evidently right; but whether this mode will equally provide for the mechanical level desirable when acting in body, is the question here.

* Among the experiments which might be made to ascertain the effect of musketry, and which would lead to improvement in that branch of the service, I shall venture to propose the following:—

First. After fixing on a proper level, invariably to be taken, some trials may be made to confirm its efficacy. This level will most probably not differ much from the position now assumed when at the present, but, if any thing, will be more uniform and more determined.

Second. To try on spread sails or targets (representing a line of infantry or cavalry) at several distances, the effect of a battalion firing two ranks and three ranks; and in the latter case, the front rank kneeling as well as standing. When acting three deep, it is to be observed, how far the execution in which the front rank remains erect is practicable on service, and when kneeling down, whether by it the rapidity in firing is or is not any way unfavourably influenced.

Third. To fire by battalions, wings, grand divisions, platoons, ranks, and files at different distance; and to see the proportion in which those different executions relatively stand in their effects.

Fourth. To investigate the existing proportion betwixt the common mode of firing by platoons, and that where two platoons perform alternately; stopping occasionally the former to see the state of the battalion, and how many platoons are loaded at the time.

Fifth. To fire by files, the two ranks executing in the common way, as well as after the manner of the French, where the men in the centre rank exchange their firelocks with those of the third. The performance in both cases is at times, unknown to the men, to be occasionally stopped, to see the number of men

The immediate necessity of strong impression in the effect of musketry is the argument forcibly urged in behalf of the execution in three ranks, as where that third rank is given up, the loss of one-third of the fire must indubitably be sustained; but some difficulty here arises as to the mode of performance: that in which the front rank kneels down is impugned as dangerous in the presence of an enemy; besides, the men, when once sunk down, are said to display no readiness to abandon the reduced position; and this, among various examples, the battles of Parma and Guastella are produced to illustrate; as in both of these, it is said, the French, as well as the Austrians, shewed considerable reluctance in getting up*. This motion is also explained as unnecessary, since where properly trained, the infantry may be rendered adequate to fire three ranks standing, and if so, why to kneel down? particularly since, though difficult, the erect position will, at any rate, meet with no great inconvenience in the first discharges, the only ones in which the addition of a rank can be of any moment†; but the hypo-

loaded in the battalion, so as to discover in what state of defence it is, as well as to detect those who have two or three bullets in their muskets.

Sixth. To ascertain the efficacy of the different modes proposed against cavalry, by observing the frequency of discharges, and mass of fire produced by them within the time that corps takes for approach. Could the target be brought to partake of the motion, and be advanced at the rapid pace of the animal, it would still be more satisfactory. The effect the various fires have here on the horses, might also be observed.

* It is, however, to be noticed, which does not speak much in behalf of the illustration, that the two nations alluded to,—the Austrians as well as the French,—have preserved the fire three deep, the front rank kneeling. The third rank men, by the Danes, discharge their pieces only when the front rank falls down; but if it keeps upright, the fire is reduced to that of the two first ranks. It is that latter manner which is invariably adopted by the Prussians in their executions of musketry, in which the men of the third fall back a pace, and thus loaded, remain at the recover ready to act if desired. In the platoon fire, the front rank of the French kneels down, and the execution is by three ranks. By the Austrians and Russians, it is generally by two, and the fire of the third is kept in reserve.

† Guibert (*Essai Général de Tactique Infanterie*, chap. iv. *des feux*), who favours the firing three ranks standing, says, that at the battle of Willinghausen, the regiments of Nassau and Royal Deux-Ponts so executed without any inconvenience, and with the greatest regularity. The mode in which it was accomplished, he explains to be, that the front rank man kept his position, the centre man took a foot to the right to fire over his right shoulder, and the rear rank man a foot to the left to fire over his left shoulder. This is somewhat different from the mode adopted in the British infantry, in which both ranks in rear fire over the right shoulder of their file leader; the front rank man brings his right foot six inches to the rear, the second takes a moderate pace to the right, and the third takes a like pace to the right, but closes up by advancing his left foot six inches to the front. Yet although these performances answer when troops are carefully trained to them, and therefore suit the beginning of a campaign, it is to be feared that unless the depôts be left to the charge of officers perfectly capable to give instruction, and who will give themselves the trouble personally to overlook the drill, the same facility and safety will not be experienced

thesis is not universally allowed; as by many this mode of execution, where the three ranks discharge erect, is impeached on the score of impracticability on service, from the immediate danger in which it places the men of the front rank; and that therefore, if the kneeling down be given up, the third of the fire may as well be done away with. They further allege, with some propriety, that admitting the execution of three ranks standing even possible, the bended position of the front rank cannot after all be given up, as were, on the declivity of a hill, the foremost rank to remain erect, the men of the third would not be able to take a proper level; and, lastly, from admitting the reasons adduced both against the performance of the three ranks standing, and the front rank kneeling, some feel inclined to reject the execution of the third rank altogether, which, from the awkward position in which the firelocks are discharged, will, they say, never be but of little effect, and may, where kept in reserve, become of much greater utility. But, however plausible the last mode of reasoning may be, and how much it applies to most cases, it can still not be denied, that where immediate and great effect is essential, the additional increase of fire cannot be well dispensed with, and that consequently troops must still be practised to discharge their muskets three deep, the front rank both standing and kneeling, to be prepared for those cases where either of those modes claim the preference.

Where danger attends the being divested of the whole support of musketry, or where, as for instance, in a last volley, to determine an enemy to precipitate its retreat, the decrease of fire is of no consequence, the fire of the third rank may, with great propriety, be kept in reserve; and where there is motion, the mode of kneeling down is not well admissible; but in a square, or where stationary, the conflict turns into a musketry execution, the lowered position of the foremost rank, or (if troops are capable of it) the firing of three ranks standing, cannot be given up without sustaining a palpable loss.

To the use of the different modes of firing, we shall now proceed.

First, As musketry execution implies the halted position, all firing must be avoided whenever on the march the immediate intention of closing upon an enemy, or withdrawing from him, is the design; since by occasioning delay, it would necessarily tend to counteract the principal object, that of advance or retreat: however, where a volley can precede the last discharge of the enemy's, so as to give it just before

in their execution afterwards, and when the ranks, after being thinned, are replenished by recruits. The firing of two ranks, the third to be kept back, will be generally found an eligible expedient, except in the squares, where the foremost or two foremost ranks may kneel down, or where stationary, an infantry may, without danger, allow the front rank to drop and take up the reduced position. A first discharge might, however, if the troops can be depended upon, be occasionally ventured in three ranks standing.

rushing on*, it will most likely have the good effect of throwing confusion in the opponent's ranks, and promote the success of the charge.

Were, while retiring, the enemy troublesome, and pressing upon the rear, the facing about and firing of the corps the most incommoded, will much promote the retrograde movement. In those cases, the two front ranks should execute standing, and the third remain loaded.

Second. If the opposed assailant be infantry, the defensive line may seek for protection in the battalion fire; but should the execution of musketry last, that by wings or alternate platoons should replace it, as more calculated, from the repetition of the discharges, to impress confidence on the men.

Third. Where engaged with the horse, as owing to the rapid motions of that corps immediate danger must attend the being divested of the whole of the fire at once, the volley by battalions becomes objectionable, and the performance by two platoons, which fire alternately, that by ranks, or by files, becomes more applicable to the case: the latter, from its tendency to disorder, a matter of no small moment in the present instance, would hardly claim any notice, were it not for the aversion some cavalry officers assert the animal betrays to the incessant noise, and greater fear he shows for the desultory fire than where the discharges are more regular.

Fourth. In all successive formations, the firing by platoons in the rotation they take post on the ground naturally presents itself as that the best adapted; and the performance may then be kept up by platoons that after the first discharge execute so soon as loaded. Yet to keep the troops within greater restraint, it would be perhaps as well, after it has run once or twice through, to give the signal for discontinuance, and to follow it by the command to operate by half or whole battalions.

Fifth. Behind intrenchments to resist a serious attack, supported by artillery, the infantry must fire by battalions; the only performance explained as powerful enough to deter an assailant from persevering in his design of forcing it. The firelocks of one rank might here be kept back to be discharged the instant immediately preceding the close combat.

Sixth. But while so posted, if the immediate resisting of a storm be not the intention, and a contest of musketry merely designed, the

* Guibert establishes it at 40 paces from the enemy's line; but this is rather far; it should, however, always precede the volley of the enemy.

† "Our infantry," says Frederick the Great, in his *Instruction Militaires*, chap. xxii. "defends an intrenchment by volleys of battalions; every soldier is to be provided with 100 cartridges; but this is not to prevent the use of guns, of which as many as possible are to be planted between the battalions, and at the salient angles."

"As long as the enemy is far distant, the artillery is to fire shots; but when approached within four hundred paces, the execution by grape shot is to commence."

file firing executed by two ranks may be adopted, where behind a parapet, a rampart, a hedge, or an abbatis, &c.; yet, where these are but little risen above the ground, as the conflict draws nearer to the common engagement, that by two alternate platoons should be substituted to it as preferable*.

Seventh. Where separated by an obstacle, such as a river, a trench, or even *chevaux de frise*, and the action altogether degenerates into an affair of musketry, the performance by wings or by platoons will generally suit the case, and claim priority over the volley, the sudden and decisive effect of which would in the present instance cease to operate, while the more frequent reiteration of shots the two other afford gratify the soldier, who, emboldened in proportion as he conceives his exertion effectual, generally judges of his execution by the noise. The performance may here take place three deep†.

Eight. Where partial attacks are merely resisted, or where the defence of the entrance of a defile, or other considerations, converge the execution within a narrow space, beside the troops opposite the same, the divisions immediately next to them may be brought to act, by taking an oblique level, and thus convey their fire to the required focus. As this cross fire (the name bestowed upon it) is useful, and of frequent recurrence, it should be rendered most habitual to the troops; to be truly efficacious, it should, however, never be attempted at too great a distance; nor should the inclining body ever exceed the front of a battalion, of which therefore to the utmost, three only can thus be brought to co-operate.

* "Behind a parapet," (R. and R. part iv. § 206, No. 6,) "hedge, or abbatis, the two first ranks can only fire, and such fire may be *file firing*, deliberate and cool, the two men of the same file always firing together: it may begin from the right or left of platoons, and should be taught in situations adapted to it, not in open ground. Should the parapet, hedge, or abbatis, be but little raised, platoon firing may be used."

† We find in the old Prussian Regulations, translated by Faucitt, 1754, part 8, chap. xviii. No. 3, "All posts stationed behind a rampart, wall, or hedge, are drawn up two deep, in close order, and the officer takes his post on the right flank; but behind a river, trench, or *chevaux-de-frise*, three deep always; the ranks are likewise to be drawn up in close order, and the commanding officer posts himself in like manner on the right flank."

"N. B. These directions relate to quarter-guards, picquet, and village-guards, but not to general's or rear guards."

ARTICLE III.

OBSERVATIONS

ON

SIR HOWARD DOUGLAS'S NAVAL GUNNERY.



1. Sir H. Douglas, in his Treatise on Naval Gunnery, undertakes to give a popular account of the true principles of projectiles, as deduced by Dr. Hutton from his experiments on velocities with the ballistic pendulum; and after fairly explaining, that the Parabolic Theory is only useful in calculations for mortars with small velocities, and therefore of no value for common practice with guns, he proceeds to assume as true, all Dr. Hutton's deductions, and particularly explains and illustrates his rules for calculating velocities and ranges, as immediately applicable to the most ordinary practice, and to be followed accordingly.

2. If, however, the two first principal examples for finding the range given by Hutton are compared with actual ranges, it will immediately appear, that the results are totally erroneous, and that consequently no dependance can be placed on the rules.

3. To find the greatest range of a 24-pounder ball with a velocity of 1640 feet, and the corresponding angle to produce that range. The result, calculated from the table of terminal velocities, and of elevations giving the greatest range, is as follows.

Greatest range, . . . 3141 yards*.

Corresponding elevation, $34^{\circ} 37'$.*.

By the tables of ranges in Adye's Bombardier, from practice at Sutton Heath, in 1810, the following different results appear with a 24-pounder iron $9\frac{1}{2}$ feet long, charge 8lbs. or $\frac{1}{2}$.

* Catapultor here quotes from Sir Howard Douglas, and not from Hutton.—ED.

Ranges, yds. 2600, 2700, 3500, 4000.

Elevations, 9° 10° 15° 21°.

So that, in actual practice, a 24-pounder ranges 4000 yards, at 21° elevation, with a charge of $\frac{1}{2}$; while

Vide 3d vol. 5. Doctor Hutton's calculation gives only Math. p. 299. 3141 yards as the greatest possible range, and that at an angle of 34°, with charge of $\frac{1}{2}$ the shot's weight, which is what corresponds, by his own rules, with the assumed velocity of 1640 feet.

3d vol. Mathes. 6. Again, to find the greatest range and page 277. corresponding elevation for a 13-inch shell with a velocity of 2000 feet, the calculated result is

Greatest range, 4158 yards.

Corresponding elevation, 34° 49'.

Page 278, 7. By the tables in the Bombardier, of Ranges vol. 3d. with Sea Mortars, 1798, a 13-inch shell with a charge of 20lbs. or $\frac{1}{6}$ of the weight, which is the greatest possible, being the full chamber, the range is 4200 yards.

Elevation 45°.

8. So that 45° elevation, with a charge of $\frac{1}{6}$ the shell's weight, gives a greater range than 34° 49', as calculated with a velocity much greater; for a charge of $\frac{1}{2}$ gives only 1640 feet, and the given velocity assumed is 2000 feet.

9. But further, for the velocity of only 1640 feet, the charge required by the rule would be half the shell's weight, or 100lbs. nearly, and thus the range calculated for a charge of 100lbs. is actually obtained by a charge of 20lbs. or $\frac{1}{5}$ the quantity. Besides, in Dr. Hutton's table, which is also quoted, of the ranges of a 24-pr. at 45°, the actual range is 2438 feet, with a velocity of 2000 feet, while by the above table from the Bombardier, it appears that a 24-pr. ranges 2600, with a much less velocity, at 9° elevation.

10. These examples will sufficiently shew how little Dr. Hutton's rules are useful for gun practice; and the

* In Hutton's *Tracts*, a 13 inch shell, at 45 degrees, with a velocity of 2000 feet, is calculated to give a range of 4455 yards.—EDITOR.

following table will exhibit their value, relative to mortars with small velocities.

13 Inch Mortar at 45° Elevation.				
Charge.	Velocity or ✓ charge.	✓ of velocity.	Calculated range.	Actual range from the Bombardier.
14	3.7416	1.934	245	245
20	4.4721	2.114	267	412
28	6.2915	2.330	291	613
36	6.	2.449	306	840
44	6.6332	2.574	327	1,054
55	7.2111	2.685	336	1,244

11. Here the "calculated ranges" are laid down according to the rule, that the ranges are as the square root of the velocities; and they are much further from the truth than what the parabolic rule gives, which is "as the *square* of the velocities," or as the charges directly.

12. These simple comparisons between Doctor Hutton's theory and facts, clearly shew, that he has left the science of calculating ranges where he found it, and that the parabolic theory is still preferable to his own; as for common mortar practice it is confessedly sufficient, while the other is equally erroneous, both with small and great velocities.

13. We may further infer, that the whole of his tables of velocities and ranges, being calculated upon the same data, must also be erroneous; and the more Dr. Hutton's attempt to establish theoretic rules for finding ranges is examined, the more it will show the superior advantage of referring to tables of actual practice, which is so easily done, by simple inspection. That Sir Howard Douglas should hold up such rules as unquestionable guides is certainly surprising; but it is easily accounted for by the obvious and indubitable conclusion, that he neglected to compare them with actual practice; and the authority of his name seems to have led the editor of the Bengal Repository into the same neglect, in publishing an epitome of his work.

Bombay,
August 1826. }

CATAPULTOR.

Remarks by the Editor on Catapultor's Letter.

1. In pointing out certain inconsistencies between the ranges, from particular pieces of ordnance, as obtained by Hutton's calculations, and as given in actual practice, we apprehend that our correspondent Catapultor will be considered to have failed in proving Hutton's *Theory* "erroneous;" and we think few will acquit him of being too hasty, when declaring that Hutton "has left the science of calculating ranges where he found it."

2. Instead of holding up Hutton's "rules for calculating velocities and ranges" as immediately "applicable to the most ordinary practice," Sir Howard Douglas, in his *Treatise on Naval Gunnery*, observes, (page 32,) that "tables of ranges formed from media of many sets of experiments, are sufficient to guide artillerists on all *ordinary* occasions; and he only insists, that in the infinite variety of circumstances under which our navy is called to act, afloat and on shore, a knowledge of the *theory* of gunnery cannot fail to be of use, *under many special circumstances, which they may not find in tables or practical memoranda.*

3. Sir Howard particularly remarks, that "the determination by theory of the precise path or curve described by a projectile in air, is a problem so difficult, that it could not, even if solved, be of use to practical artillerists, on account of intricacies of calculation quite inapplicable to actual service." But although of opinion, that "our practice, under *ordinary* circumstances, may be conducted with tolerable certainty, according to the tables of ranges that have been published, Sir Howard certainly ventures to remark, that no director of artillery should be ignorant of the principles upon which these tabular cases are formed, nor of the more important discoveries in gunnery which relate to armament and effect." Of these he accordingly submits an abstract. But he also carefully points out the great error committed, by the practical adoption of Robin's and Hutton's theory, in favour of short guns, by the too general introduction of carronades into our navy; and carefully holds this error up to notice, as an instance where precision and accu-

racy of fire, the grand object of all artillery practice, was sacrificed to too general an application of theoretical prejudice in favour of short light guns.

4. Hutton also, alluding to the several solutions of the grand problem in projectiles, attempted by Newton, Bernouilli, Euler, and Borda, &c. &c. remarks, that their results "amounted to nothing more than partial and barren speculations, *of no use in real practice* ; and adds, that no hope remains of a possibility of obtaining a correct solution of the general problem in any way, without the aid of some *further experiments* to ascertain *horizontal ranges* and *times of flight*, at all convenient degrees of elevation, which, to be more accurate and satisfactory," he observes, "should be accomplished with several sizes of shot." Again, "in order to form proper rules for practical gunnery, he remarks, we ought to have good experiments made with each size of mortar, and with every variety of charge, from the least to the greatest." It is true, he designates his own experiments as "extensive and varied." But although they be so estimated, he expressly denies them to be "fully adequate to the purposes of all demands, either of the practical artillerist, or of the speculative philosopher."

5. With such acknowledgments from Hutton and Douglas before him, we do not think Catapultor justified in assuming, that either of these authors held Hutton's theory for calculating ranges and velocities "immediately applicable to the most common practice," neither having pretended to go further than to collect together some of the best theoretical rules applicable generally to "gunnery, founded partly on theory, and partly on practice."

6. Hutton's practice was, however, confined to a few pieces of ordnance in general use. He tried few guns, and did not try "each size of mortar, with every variety of charge." The accuracy of some of the practical data he assumes from his experiments, may certainly be questioned. His own works are indeed at variance with each other on these points ; for in page 247, vol. 3d, Tracts,

he quotes $178\sqrt{d}$, as the general value of the greatest terminal velocity for any ball whose diameter is d inches. But $175.5\sqrt{d}$ (i. e. $175\frac{1}{2}\sqrt{d}$) is given as this general value in page 290, vol. 3d, of his *Course of Mathematics*. These different values for the same thing, having originated in their being calculated from two different experiments, the first with a ball of two inches in diameter, the last with one only 1.965 inches; and though at first sight such variations may appear extremely trifling, yet they prove very serious in the end.

7. Not only have different values been given, as in this case, to the *formula* for calculating terminal velocities in Hutton's *Tracts* and *Mathematics*, respectively, but the diameters of cast iron balls, from 1 to 42lbs. in the tables of these two publications, from which their terminal velocities, &c. &c. have by the formula in question been deduced, are essentially different; while the dimensions of balls, as contained in the tables of both of those two works, are again considerably below those fixed by the Board of Ordnance, in September 1825, as the proper diameter of our shot and shells. (Vide page 247, vol. 3d, Hutton's *Tracts*, from which Sir Howard Douglas's tables are taken; page 291, vol. 3d, Hutton's *Mathematics*; and page 132 and 133, No. X. of our *Repository*.)

8. Douglas and Hutton, in applying the latter tables to calculate the question referred to in the 3d Par. of Catapultor's letter, viz. to ascertain the greatest range of a 24-pounder ball, with an initial velocity of 1640 feet per second, and the corresponding angle of elevation for the piece, accordingly give the results very differently, or as follows :

	Range.	Elevation.
Page 299, Hutton's <i>Mathematics</i> , 3d vol.	7829 feet	34° 15
„ 270, „ <i>Tracts</i> ,	8336 „	„ 34° 15
„ 137, Douglas's <i>Naval Gunnery</i> , . .	9424 „	„ 34° 37

9. Now the first result is obtained by taking the 24 pounder ball as measuring 5.60 inches in diameter, and calculating the terminal velocity (by formula $175.5\sqrt{d}$) at 415 feet for a ball of that diameter.

The second result is obtained by taking the 24-pounder ball as measuring 5.546 inches in diameter, (this being assumed on the premise, that a cast iron ball weighing 24lbs. Avoirdupoise will measure 5.546 inches, because a former 9-pounder gun ball measured 4 inches,) and calculating the terminal velocity by formula $178 \sqrt{d}$ to be 419 feet for a ball of this diameter.

The third result is obtained by taking the 24-pounder ball at the last diameter, viz. 5.546 inches, and last terminal velocity, or 419 feet. But instead of taking any of the exact numbers from Hutton's tables, Sir Howard Douglas was to take a mean of two of those numbers, as nearest to the result of his calculation. In so doing, however, Sir Howard erroneously took 3.4532 as a mean between 3.0549 and 2.8515, instead of taking 2.9532, and thus he obtains a range of 9424 feet or 3141 yards, as erroneously attributed by Catapultor (in par. 5) to Hutton, instead of 8059 feet. But the diameter of what in common parlance is termed a 24-pounder ball, instead of being 5.546 and 5.60 inches, would appear, by our latest regulation, (vide pp. 132 and 133 of our X. No. of the Repository,) to be from 5.584 to 5.639 inches.

Now the terminal velocity and range of a ball 5.639 inches, if calculated by formula $175.5 \sqrt{d}$, will be 416, terminal velocity, and 9337 feet, greatest range, though by formula $178 \sqrt{d}$, it will be 422 and 9606 respectively; but if the terminal velocity be calculated by theorem page 369, vol. 3d, Hutton's Mathematics, or by the formula

$$\sqrt{4g \cdot \frac{4}{3} d \frac{N-u}{u}}.$$

we shall have results which, in elevation, terminal velocity, and range, will considerably exceed any of those quoted.

10. Again, Douglas and Hutton, in applying the tables of the latter to the question contained in the 6th paragraph of Catapultor's letter, viz. to find the greatest range and corresponding elevation for a 13 inch shell, with a velocity of 2000 feet per second of time, give them as follows:

ments shall enable us to replace it with one "more consonant to the true phænomena of nature."

13. Hutton's calculated velocities for cast iron shot being theoretically deduced from experiments with balls of very inferior dimensions to those in common use for artillery practice, appear to have been underrated. This, if the fact, would, with other matters already adverted to, explain much of the variation between theory and practice, alluded to in Catapultor's 10th paragraph. Our view of Hutton's velocities, as regards the 24-pounder, seems confirmed by the following table from Olinthus Gregory's *Mechanics*, which exhibits "in one view the velocities with which a 24-pound ball issues from the mouth of a gun, when propelled with the several charges expressed in the first column. 1st. According to the theory developed in the volume from which we have made these extracts*. 2dly, According to the experiments of Mr. Lombard at Auxerre, on guns for land service. 3dly, According to the experiments of Mr. Teixeira de Norbee, at Toulon, on guns for sea service. 4thly, and 5thly, According to the determinations of Mr. Robins and Dr. Hutton."

Charges of powder.	Velocity from theory.		Mean velocity. From theory.	Velocity from experience.		Velocities.	
	when T=31	when T=298		Lombard.	Norbee.	Robins.	Hutton.
1lb	622	524	573	575	570	640	500
2	980	836	908	906	910	750	730
3	1.072	918	995	989	1.020	969	830
4	1.233	1.057	1.145	1.132	1.245	1.069	940
6	1.407	1.216	1.312	1.320	1.340	1.215	1.164
8	1.564	1.351	1.457	1.425	1.560	1.319	1.348
10	1.581	1.370	1.476	1.475			1.500
12	1.631	1.421	1.526	1.530			1.600

14. Catapultor certainly seems to go quite beyond Hutton's intentions, when he attempts (in par. 7 et seq.) to apply to *mortar* practice the deductions made from

* French work "Le Mouvement Igae."

the experiments in 1775 to 1778, (which refer exclusively to guns,) more particularly when he applies them to 13 inch mortar shells with *small* charges; for Hutton, in page 160, 2d vol. of his Course of Mathematics, expressly says: "As to the cases in which projectiles are made with *small velocities*, or such as do not exceed 200, 300, or 400 feet per second of time, they may be resolved tolerably near the truth, *especially for the larger shells*, by the *probable theory*."

15. In page 312, 13, vol. 3d of Hutton's Tracts, he submits a table, which shews, that the shortest piece of ordnance, which can give its projectiles a velocity of 2000 feet per second of time, must be at least 15 calibres long; and even then, he calculates, that a load or charge of $\frac{68}{100}$ of the weight of the shot must be used, to give so great a velocity. But Hutton here evidently refers to pieces of ordnance having a portion of the calibre of the piece occupied by the load or charge, and not to mortars with a nature of chamber very different from that of guns.

16. Now a 13 inch mortar is never 15 calibres in length, even our longest 13 inch, or sea mortar, not being 3 calibres long in its chase. But no projectile from a gun of only 3 calibres would, according to Hutton's table of charges for guns, obtain a greater velocity than 1000 feet, with a load of $\frac{17}{100}$ the weight of the shot; yet in a previous page (301) Hutton acknowledges, that a 13 inch mortar may project a shell with a velocity fully double, or equal to a piece of 15 calibres, i. e. 2000 feet.

17. The fact seems to be, that although the table he refers to be "far more exact and satisfactory than any thing of the kind before given for such purposes," yet it, with all others into the calculations of which charges or portions of the bore enter, are plainly intended to apply solely to guns, and not to pieces of ordnance with separate chambers, such as are generally peculiar to mortars and howitzers. Indeed, from the nature of his data, it is evident that he never intended those rules which shew what portion of a gun's bore or calibre, charged with a

load of powder, will give certain ranges and velocities, should ever be applied to mortars and howitzers possessing chambers distinct from, and much smaller than their calibre, besides being of various forms and figures, not at all taken into consideration.

18. At a trial made at Woolwich in 1787 and 1789, with an 8-inch mortar, and four shifting chambers, viz. a conical with circular bottom, the same reversed, a cylinder with circular bottom, and a spherical chamber, it was found, that the spherical chamber, *when filled*, gave the longest range; but the conical, when the chamber was not filled.

19. Again, infiring mortars, if the charge be not sufficient to fill the chamber, a piece of wood, turf of earth, or other proper substance, should be inserted between the charge and the shell, so as to fill up the cavity between them; otherwise the velocity of the projectile will be decreased, in proportion to the cavity left, even so far, as that the range obtained will, in extreme cases, be equal to only $\frac{1}{5}$ of the distance that might be given by the same charge and projectile, when the cavity between them is properly filled up.

20. A consideration of these and other circumstances, peculiar to the effects of powder when fired from mortar and howitzer chambers, (well worthy of investigation and consideration by the provers of gunpowder from such pieces of ordnance,) must convince Catapultor, that in par. 7 et seq. he has gone far beyond Hutton's doctrines*.

21. Catapultor's letter has led us into remarks, which we fear will not tend to relieve us from a reproach we have often incurred, viz. of being both too prolix and professional. But if the observations we have presumed to hazard should turn the attention of our readers to investigate the subject of Catapultor's letter more fully than we have either leisure or ability to bring to it, we

* For Observations on Mortar Eprouvettes, by a Bengal Artilleryman, vide Article IV. No. 2 of this Repository.

shall not regret having rendered ourselves again obnoxious to such criticism.

22. We shall be glad to hear further on this subject from any artillerist : and would fain hope what we have said may provoke the pen of others, as well as that of our esteemed correspondent Catapultor.

ARTICLE. IV.
ON DESERTION,

AND

The present System of Recruiting in Bengal.



The following letters, drawn forth by the 5th article of our VIIIth No. are submitted to our readers, under the hope, that the points therein touched upon may be still further discussed, with the same temper and moderation which has, we hope, heretofore marked all matter admitted into our pages.



To the Editor of the Military Repository.

In your 8th No. published in March last, I observed a letter from an "Adjutant of Native Infantry" on Desertion, and the present System of Recruiting in Bengal; and as I differ from some of the opinions therein advanced, I proceeded to state my sentiments, in the hope, that should any of my remarks be deemed either worthy of notice, or likely to cause beneficial discussion, you will insert them in your Repository.

In order to diminish desertion, and eventually to eradicate it from our army, the adjutant "recommends, that it be made imperative on every commandant of a corps, to grant discharges in time of peace (on application) to men whose period of service had expired."

But why limit discharge to men who have served the three years for which recruits originally engage? Would it not be more politic, in time of peace, to allow any sepoy to take his discharge, whenever personal inclination, family interests, or private circumstances render this measure desirable? The compulsory retention in our service, in time of peace, of any man anxious for his discharge,

seems a rigid and unnecessary exactment of his bond, having a tendency to occasion desertion, to prevent enlistment, and to create disgust, if not to spread discontent (unreasonable I allow) among our ranks.

The circumstances which operate to cause enlistment in European armies, have little if any influence in recruiting the ranks of our Indian forces. Want of moral character, of work, trade, or occupation, induce the lower classes of cities and towns in Europe, who indulge in drunkenness, to catch at a recruiting bounty, which rises or falls according to the wants of Government, or the price of labour among the populace.

But in India, our recruits are obtained from the most respectable class of our village population, noted for sobriety, and restricted by caste and religion, to the most simple articles of food. They possess, like most cultivators of the soil, a good moral character, and never want for employment. The profession of arms, and the arts of husbandry, are alike the business to which they are born; the former is eagerly followed in early life, as best supporting the credit of their caste, and conferring due honour on their birthright; while the last is their certain resource, in times when military service cannot be obtained, or when age, infirmity, or other circumstances, cause them to abandon their proud and favourite distinction of carrying arms.

The European soldier enlists as the last resort of an extreme necessity, the sepoy from personal attachment to a soldier's life.

Under such circumstances, ought the service of the Asiatic to be subjected to the rules which exist against the European? and might it not, on the contrary, in time of peace, be rendered more voluntary, or dependant upon his feelings and necessities? which could seldom, except in time of war, interfere materially with the wants of the state.

Numerous as are the classes from which our native army is capable of being recruited, as well within as without our provinces, our regular corps might, like our irre-

gular ones, seldom perhaps want recruits, if the feelings, habits, and prejudices of those classes could be as fully consulted and conciliated, under the system of organization, discipline, and government, now bestowed upon our regular corps, as they were formerly.

Instead of attributing the difficulty of late years experienced in completing and increasing our regulars, to the great, but gradual addition made to that branch of our army, (which would lead to the erroneous supposition, that the military population, as well of our new, as of our ancient territories, were inadequate to keep pace with the ratio of our wants,) it seems questionable, whether some of the inducements which formerly led the military population to enter our regular corps, have not entirely ceased to operate.

The sepoy service formerly conferred certain practical privileges, if it did not formerly convey important immunities. Enlistment was a protection to a sepoy family in civil life, and raised him a step above his fellows; while, if on leave of absence from his regiment, he could carry arms without hindrance, or payment of duty, or tax.

But matters are now reversed: the consideration and dignity formerly possessed by the sepoy is now usurped by the peon, among the civil community. He alone carries arms, and he disarms any sepoy presuming to travel with the sword of his fathers, exacting otherwise, equally from our regular soldiery on leave of absence, as from the rest of the populace, a custom duty, from which he is himself exempted.

The general tendency of the measures of Government of late years, have certainly been such as serve to protect equally the persons and property of every class of its subjects, without any distinction; but in doing away with all distinctions and privileges, and in establishing and maintaining the superiority of the civil power over military force, it was difficult to strengthen the former, but at the expense of the latter.

Having perhaps said enough, if not too much, on this matter, I shall next remark, that the system of recruit-

ing by battalions of levies, and admitting into the service men of inferior caste, seems highly prejudicial. Men of high caste and respectability do not like to be associated with those greatly their inferiors; nor can an officer recruiting by numbers, for a premium, be actuated by that *esprit de corps* which he would feel, if he recruited solely for his own regiment. It has been very truly said by you, that the native army must ever take its tone from its European officers. All measures of Government, therefore, which tend to raise the zeal of officers in command of corps, and to give them a permanent interest and pride in the discipline and superiority of their own battalion; all measures that tend to uphold or increase the respectability of the senior officers of regiments, must consequently be attended with an improved feeling in our native ranks, and *vice versa*.

There are many points on which I differ from the "Adjutant," but in none more completely, than in attempting to assimilate the native soldier, in dress and appearance, with the European. The more the European is occupied in the care of his dress and accoutrements, and brought to the parade, the better. It keeps him from drunkenness, gambling, and every kind of offence attendant upon idleness; but the more the native soldier is employed in these (in his estimation) valueless trifles, the more dissatisfied he will become with a service, which, in this case, must occasionally abridge, not only his ease and recreation, but interfere with occupations, too often connected with religious prejudices, or with confirmed habits of life and caste. The native soldier has the performance of all the military duties of escorts, of cantonments, and of garrisons; and these are to him by no means either few, or unirksome. The too close approximation of him to the European in dress and equipment, must not only be contrary to his comfort and taste, as well as foreign to his habits; but is to be deprecated, as throwing upon him a most serious additional expense: while innovations of this nature have, in some unfortunate but well known instances, led to the erroneous, but not less fatal idea, that

encroachments on his most cherished prejudices were studiously contemplated.

Discharges in time of peace are undoubtedly, as stated by "the Adjutant," denied to men entitled to demand them. In the course of a long service, I have constantly seen the practice prevail, particularly if the applicant was a fine looking soldier, without, in my opinion, any sufficient reason existing for it. The evils attendant on the old half mounting system, was certainly one bar to men formerly getting their discharge.

Under the existing system of recruiting, it is, I believe, impracticable to apprehend deserters, by any register that can be kept. Very few of the recruits of the present day give in, either their real names or places of residence, well knowing, that should circumstances require their leaving the service, or their inclination for a military life change, they cannot obtain their discharge when they wish for it: and I think, that many eligible men would enter the service, on condition of coming into a regiment where they have friends, relations, and near neighbours of their own villages, who would not enlist in a levy, with the chance, or almost certainty, of being sent to a regiment where they have none.

I do not think any regulation should be established, directing each man to pay for the carriage of his baggage, according to the quantity conveyed. This would lead to endless disputes: one lot more or less would give rise to discontent and quarrels.

Much indeed, as the Bengal "Adjutant" observes, has lately been said and written on the character of the sepoys, and very unfair comparisons have been drawn between them and European troops. I hardly know if they can ever be brought exactly to equal the European British soldier; but if the regular native regiments be as fully and efficiently officered as those of His Majesty, they will not, I am convinced, turn their backs to any European army that can be brought against them; and in point of suffering privations, will ever far surpass the European.

With regard to promotion, there is but one just general principle that can with safety be followed, (length of service:) the contrary would often open the door to abuse; partiality, and perhaps bribery would prevail; (I have known the latter to exist to a most scandalous degree:) and there are few subordinate officers in the service who would dare to notice such a practice, not only from the fear of going to the wall, when opposed to the influence of a commanding officer, but from the fear of being unable, against such superior influence, to bring it to the proof, in consequence of the fears of the men operating so as to prevent them giving true evidence. In adhering to the principle of seniority, it should not, however, operate to the exclusion of conspicuously meritorious conduct: but would it not be hard indeed, if sepoy of 20 years standing and upwards, should be passed, even when they reach the heads of their companies, because they have not the smartness, alacrity, and apparent active spirit of young competitors? Veteran battalions, which I trust I shall yet live to see established on this side of India, as well as at Madras, would in a great measure remedy the evil of inefficient non-commissioned and commissioned officers, occasioned by slowness of promotion; as well as promote the efficiency of a regiment, by carrying off the old and infirm, who on actual service are ever a clog to any corps.

The reasons assigned by you for the reluctance of the men of the Upper Provinces to proceed to Bengal, are perfectly just; and I think, to obviate the necessity for sending men of Hindoostan to the lower parts of Bengal, it would be very desirable to raise more Marine Regiments, such as the old 20th, or some nearly upon that footing, reserving them for the stations below Benares, and never allowing them to proceed higher up, but to relieve each other in their own circle. Heretofore Volunteer Regiments, and those raised for general service, have been kept high up in our Upper Provinces, thereby defeating the object apparently contemplated in raising these corps.

There is another point I should like to see noticed ; it is the very frequent fires amongst the sepoy's huts, which I am rather inclined to believe, if properly brought to the notice of Government, might be remedied, by Government, in its liberality, causing the roofs of them, in the first instance, to be tiled free of expense to the men, and making them ever after keep them in repair. The men would be much pleased with such a mark of consideration, which might be accomplished at an expense of about 1100 rupees to each regiment ; or I do not know if they would not even be pleased with an order for them to do it themselves. At every station of the army, it would occasion eventually a great saving to the men. At present, no corps reaches a station, but finds the huts in a miserable condition. The sepoys are in the habit, when they know they are about to quit a station, of pulling out the wood and bamboos from their chappers to burn, leaving the roof to fall in. At Madras, I believe, the men are allowed a certain sum of money to build huts.

I have proceeded to much greater length than I had any intention of doing when I sat down ; but the efficiency and welfare of the Bengal army is a subject of such interest to me, that it invariably leads me further than I intend to go, when I commence upon it.

Yours, &c. &c.

Cawnpoor, Sept. 1826.

A BENGAL OFFICER.

NOTE. We have taken many liberties with the above Letter, which we think our correspondent will excuse

RECRUITING IN BUNDELEKUND.

"An attempt to recruit should also be made in Bundelkund. The Boondelahs are a fine race of men, and I think would enlist, but at present there is a feeling against them: the native officers say, 'The Boondelahs never stay with their corps, they always desert;' but the trial is certainly worth making."—See *Military Repository*, No. VIII. page 330.

To the Editor of the Military Repository.

SIR,

In consequence of some remarks attached to a paper in the last number of the *Military Repository*, signed by an "Adjutant of Bengal Native Infantry," I take the liberty to offer the following observations, which occurred to me on its perusal; and if deemed deserving of a page in your *Repository*, I shall feel obliged by your publishing them. Permit me then to say, with respect to recruiting in Bundelkund, which the writer appears to think would succeed, and particularly recommends on account of the Boondelahs being a fine race of men, that I have an opportunity of knowing an attempt to raise men for a regiment stationed in that province was not very long since regularly made, and totally failed of success; in as much as the number of recruits obtained was too few and inconsiderable to repay the time spent in making the trial, even though the officer detached on the duty possessed some peculiar advantages, in addition to the encouragement he met with, and every where received from the native princes of the districts, who threw no obstacles in his way, but on the contrary, afforded him every facility for effecting his object, and forwarding his views.

Moreover, I have it in my power to state, from personal knowledge, having lately marched from Bundelkund, where my corps has been quartered for the last two years, that during the whole of that time, not one solitary native of the province was enlisted for the regiment, though upwards of four hundred men were entertained and procured for the corps, while there, from other and distant districts; and in this instance I can also take upon myself

to add, that no prejudice existed against them in consequence of what the native officers say about their propensity to desert, and that any Boodelah presenting himself would have been enlisted without hesitation, if unexceptionable in every other respect.

But in this case, as I have previously said, none were offered to serve ; and the regiment I allude to left the province without a single native of it in its ranks, though no kind of prohibition was in force against their entrance.

To account for this unwillingness to enter our service, is of course a mere matter of opinion, and as such I may be excused for giving mine.

The chief, and in fact the only cause of the disinclination of the Boondelahs to enter the service of our Government, may I conceive be attributed to the ease and facility with which they obtain similar employment under their own ; and the preference which they give to so ill paid a mode of obtaining their subsistence, I will hereafter endeavour to account for. In Bundelkund, there are so many petty princes *partially* independent of our control, that service is probably more easily obtained *there* than in any of the provinces in India under the entire management of our Government. These remnants of royalty are so numerous, and anxious to surpass one another in state and show, that their treasuries are generally not very lightly taxed, to pay as many followers as their emptiness and scanty sources of supply will possibly permit them to support. This attachment to grandeur, competition to be apparently rich, and endeavour so to hide real poverty, necessarily give employment to many more than either the state or personal safety of these chiefs require, or would in fact have, were it not for that love of superiority over their neighbours which they possess in an uncommon degree, in consequence of their peculiar situation amongst so many of similar rank and pretensions. Thus it is, then, that I conceive the overplus population of Bundelkund not practising agricultural labour, obtain their bread, and the resorting to our service for livelihood seldom or ever takes place, be-

cause unnecessary. To those who may be disposed to doubt this reasoning, or are inclined to think it insufficient, on account of the miserable pittance the native service affords, when compared with the pay of a Company's sepoy, regularly disbursed, seldom in arrears, besides the many advantages obtained, and privileges granted to those who serve beneath the English government, I reply, that the idle and lazy life they are so willingly permitted to lead, the absence of all discipline and order, the comparative ease and freedom they are cheerfully allowed to enjoy, together with that very natural fondness and partiality for their own provinces, from which they are scarcely ever asked or required to move, makes up for, and is considered by them as an ample and full equivalent, for the double, but less easily earned, emolument of those serving in the regular ranks of this army.

Yours, &c. &c.

AN OFFICER.



To the Editor of the Government Gazette.

SIR,

The article in the 8th number of the Military Repository, just published, signed "An Adjutant of Bengal Native Infantry," to which some very sensible editorial remarks are appended, seems to invite discussion; and as we must all concur in opinion, that the subject therein alluded to, viz. recruiting the native army, is one of vital importance, I hope you will not consider me intrusive, in offering a few observations upon the practice at the Presidency of Madras.

At Madras, the custom of enlisting men of inferior caste, to serve in the native regiments, has long been exploded, and, I think, for very substantial reasons: for surely it is not natural to suppose, that a man who has been all his life accustomed to be trampled upon, and insulted by the higher classes of his countrymen, should all at once (from the mere circumstance of being enlisted as a Sepoy) emerge from disgrace, and entertain the high

notions of, and confidence in himself, which constitute the mainsprings in the character of a soldier.

On the other hand, Bramins, Mupoots, and Patans, from the very hour of their birth, are taught to believe themselves superior to every one else, and of course, if enlisted, carry those notions into the service; to which may be added, in the case of the latter particularly, their belief in pre-destination, which is calculated to produce the greatest effect in the field of battle.

The example of the Madras pioneers will probably be offered as an objection to this statement, as these two battalions are exclusively of low castes, and are generally men who have at one time or other been domestic servants of various descriptions. They have many and great failings, and yet they are brave, active, and steady in the field, and form altogether a most useful body of men; but the usefulness of low caste men, as a *distinct working corps*, will never, I conceive, remove the objections which have hitherto prevailed against their being mixed in the other branches of the service.

These objections must have been so deliberately canvassed, when Government adopted the resolution of not continuing to enlist Pariahs in the *regular* army, that they must surely be entitled to great regard: for my own part, I hope to see the enlistment of them always confined to their proper corps, the Pioneers, where they are not liable to be taunted, on account of their birth, by men of superior caste.

The editor of the Repository remarks, that the practice of refusing discharges to men entitled to them, which occasionally prevails in Bengal, could not take place at Madras, as the half-yearly inspections of corps there would detect and prevent the evasion of the standing orders.

Inspections at Madras only take place *yearly*; and I do not conceive I am wrong in stating, that good looking men, who apply to be discharged, are just as often prevented from persisting in their demand, by flattery or

remonstrance, as in Bengal : I have had, myself, experience of this, and have no doubt of the fact generally.

Young smart sipahis, of from six to ten years service, are generally selected for promotion to the rank of lance naick, in the Madras army, instead of old worn out men, at the head of the list : there are, of course, exceptions in particular instances to this rule.

The pay of the Madras sipahis, on field service, is 9 rupees 7 annas, and when on foreign service, excellent and abundant rations are found them, free of cost; and not only that, but when the issue is from necessity short of the quantum allowed by Government, a balance in money is paid to the sipahis, to enable them either to make a purchase in the bazar, or lay it by.

A sipahi can leave six rupees per month with his family : and lately in Ava, bills to a considerable amount were frequently granted by the paymaster, to enable the men to remit additional savings, free of cost, to India.

Although the Madras sipahis have always shewn the greatest readiness to embark for Rangoon, the fact of their *liking* the service appears to me very problematical; but such a high sense of duty invariably actuated every man, when ordered to Rangoon, that desertions have only in one or two solitary instances occurred; and in the patience and cheerfulness with which they have endured the severe fatigues of the late campaign in Ava, they cannot be surpassed by any troops in the world.

I am, &c.

AN OFFICER OF NATIVE INFANTRY.

ARTICLE V.
QUESTIONS
ON
FIELD EXERCISES AND EVOLUTIONS.

SIR,

I wish much for information on certain sections of the drill, which are differently understood by different people. You will, therefore, oblige me by publishing in your Repository the following questions. If they are answered by any of your learned correspondents, I may probably trouble you with a few more hereafter.

Your obedient servant,

SIMPLE SIMON, Ensign,

70th Regiment, N. I.

MILITARY QUESTIONS.

7th. By sections 20th, 23d, and the 4th paragraph of the 71st section, is it meant, that the outer flank man should lengthen his pace to 33 inches* ?

2d. By the 2d paragraph 47th section, after the squad is faced about, are the left files to step to the rear of the right, or to the front of them ? If the former, the forming two deep again is more difficult than it would be after stepping up ; and the latter, too, seems to be their proper order. In other respects they are much alike : in either case the fronting is by the left files stepping up to their intervals in line ; and suppose the squad turned four deep to the front, and required again to turn to the left or right, in the one case turning to the left would cause an inversion of files ; and turning to the right would produce the same mishap in the other case.

* Torrens says, Section 20. "The outward wheeling man *always* lengthens his step to 33 inches.—EDITOR.

3d. By the second remark on the same section, is it required, on re-forming two deep, that the outer file on the pivot side should mark time one pace, and then slide to the rear of the right; or that the right files (supposing the right in front) should step in left of the front? The former way is more convenient, but may not by all be deemed quite agreeable to the general tenor of the Regulations. (a)

(a) *Doubling the Files.*

The doubling of files was an evolution of frequent reference in the former exercise, but which, since better expedients have been devised, is seldom or never employed; it is performed by taking first open order, and after the files have been numbered from right to left, by the men of the even numbers, at the words *form—six deep**, who step behind those of the uneven ones that stand still, (*fig. 29.*) From the facility this disposition in double files apparently offers, after facing, to march towards a flank, it was, in the Hanoverian army, at one time, substituted for the file movements; but this has been since discontinued, as it was found conducive to disorderly practices, calculated to create loss of distance, and, from the intermixture of ranks, to be precarious and dangerous: when in motion, troops, thus situated, were unexpectedly and suddenly assailed; besides, the necessity for the files to be previously numbered, must suffice, in itself, to condemn the measure, by debarring it of any application on service, where every casualty must interfere, and tend to derange the preparatory arrangement.

But if the position in double file is ill adapted to replace the flank movements, its use is, perhaps, still more unfortunate, when applied to the route march, where, in addition to the objections produced, it will insensibly lead the individual to an irregular execution, and by accustoming the men to be careless and inattentive while on the march, disqualify them for the performance of one of their most important duties; like the joggling trot, which disgraces both the horse and the rider, it reflects, wherever it is practised, neither credit on the corps nor its commanders; but as, notwithstanding all that can be alleged against it, as well as notwithstanding the silence the Regulations keep respecting the doubling of files†, this irregular mode of crawling along the road,

* Were a body only in two ranks, the command *form—four deep* must be substituted for that mentioned above.

† This alludes to the R. and R. In the F. E. and E. the different modes of forming four deep (double the files) are inserted; their use is, however, never exclusively recommended, and their application to the route march not mentioned. Part ii. § 47. part iii. § 76, No. 21.

4. In the countermarch by files from both flanks, section 56, ought the leaders of subdivisions, after countermarching, to lead on to the Havildars (serjeants) marching, and from thence give the order halt, front, &c; or ought they to halt at the centre, let their subdivisions pass on, and halt dress them on the centre Havildar (serjeant)? The latter would at least seem the better way, when two centre companies change places preparatory to the line changing front; for thus the officers of these companies are enabled to dress their men the more easily on the colours and the distant marks.

5. In section 86, when the order 'shoulder forward' is given, is it intended the men should *wheel*? If they do not, while the leading division advances the radius, the others have to bring their shoulders forward *twice*; and, on each occasion, they must of course lose a space equal to the difference between the radius and the arc of the quarter circle.

6. Section 110th states, that, supposing the right in front, when the order is given to wheel the half circle to the right, all the rear subdivisions must half face to the

still remains a favourite motion among several military men, and the narrowness of the road is generally urged as an apology to countenance the contrivance. The Duke of Wellington, to thwart every pretence, and to secure the progress in open column, directed that all route marches, when so unfavourably circumstanced as to ground, (and, which was the case in Portugal, where the roads are narrow,) should be performed in sections of three*.—*Suasso, Vol. 1, page 181.*

* As the opinion of so distinguished an officer as the Duke of Wellington must be highly gratifying on all military topics, I have inserted here the instruction alluded to, as it is published in his series of general orders.

"G. O.

"*Lousao, 16th March, 1811.*

"The commander of the forces requests, that for route marches, each company in every battalion of infantry may be told off in threes; when the column is to be formed for the march, the companies must be wheeled up or backward by threes, and each stand in column of three men in front, which is as large a number as the greater proportion of the roads in Portugal will admit; this front can easily be increased or diminished, as circumstances may render expedient.

"The commander of the forces refers the officers particularly to his orders regarding the march of companies, or smaller divisions, through a defile or any other difficulty; the soldiers cannot make the march with ease to themselves, if they are obliged, or allowed, to close up intervals, the difficulties may occasion, by running.

"The same orders are applicable to the cavalry."

left; and, on the next word of command, all must step off at once. If all commence circling at the same time, it appears to me, that the wheels of each column will more resemble figure 49, than the combined movement will resemble figure 50, A. Is it proper that, though the rear subdivisions all half face, and step off together, yet none shall actually commence circling round till it arrive where the leading subdivision commenced wheeling?

FROM ANOTHER CORRESPONDENT.

In the sections 86 and 87, in General Torrens' new work, is laid down the method by which a defile is to be passed to the front or rear, from the flanks or centre of a line. There appears to be something wrong, or omitted in the detail; for as the manœuvre stands at present, it is correctly impracticable.

The wheel on the new moveable pivot, is applied as the means by which the divisions are to follow the leading one, which is to march direct to the front. Now, as the moveable wheel is to be made at the same pace and time as the evolution, in this instance quick; and the radius of a $\frac{1}{4}$ circle, to its arc, is said to be as 7 to 11; the leading division has to move over a space equal to 7 only, whilst the succeeding or wheeling divisions have to go over one equal to 11, and this operation is again repeated to bring the divisions into column, in rear of the leading one. It then follows, that as 7 is to 11, so is 14 to 22, and the second division has lost 8.

If the divisions are strong, there will be a loss of distance, which it would be totally impossible for the rear divisions to regain, without extreme hurrying, and the greatest irregularity of march.

A remedy is easily applied, and that will go some way to prove the existence of an error. Perhaps the best application would be, at the head of the column where the cause arises, by directing the leading division to mark time, at the extremity of the first radius, until the second division has gained 4 of the 11 of the second arc, when the word "forward" may be given to it. X.

Bengal Native Infantry.

TO THE EDITOR MILITARY REPOSITORY, CALCUTTA.

SIR,

The accompanying illustration of paragraph 4, section 71, of Toren's, is at your service, and may prove of great use, if published in your Repository, which sometimes reaches me at this place, and is always welcomed for the variety of its information.

Your obedient servant,

May 16th, 1826.

L'AVENIR, Major General

Commanding the Honourable Company's Troops at St. Petersburg.

1. Suppose a division of files covering 22 paces. This radius gives, in paces of 30 inches each, a quarter circle of $34\frac{1}{2}$ paces, and a difference of $12\frac{1}{2}$ paces. Suppose this division wheeling, and continuing the pace of 30 inches throughout the wheel. While it completes the wheel, the next division comes up 22 paces, and wheels $12\frac{1}{2}$, the proportion of 11 to 7, as ascertained by the following calculation, viz.

If 11 paces wheeled by the front division leaves 7 to be wheeled by the following division, how many paces should remain to be wheeled by a rear division, when the front division has wheeled $34\frac{1}{2}$, stated thus, 11, 7, $34\frac{1}{2}$, 22 the answer, and the remainder actually wheeled is $12\frac{1}{2}$ paces.

2. Again, suppose the same division, with the radius and arc of the quarter circle both calculated in paces of 33 inches, the radius will be..... 20 paces.
The arc of the quarter circle $31\frac{1}{2}$ do.

The difference..... $11\frac{1}{2}$ do.

Put it in motion, and allow all the rear divisions too, to step off at paces of 33 inches. While the leading division is wheeling $31\frac{1}{2}$, the next advances 20, and wheels $11\frac{1}{2}$ precisely correct as to proportion; for as 11 is to 7, so is $31\frac{1}{2}$ to 20, the remaining $11\frac{1}{2}$ supposed wheeled. But the pace of 33 inches suits not the march in column.

3. Again, suppose the same division, with the radius and the arc of the quarter circle calculated as just men-

tioned, (viz. at 33 inches,) but the column to move at 30 inches to the pace, while the leading divisions wheel at 33 inches per pace.

The leading division will clearly complete its wheel in $31\frac{1}{2}$ paces, while the rear division advances 22 paces, and wheels only $9\frac{1}{2}$, about 2 less than the difference between the radius and arc of the quarter circle, $2\frac{1}{2}$ paces. This loss will always be equal to the difference of the radius, as calculated at the shorter and the longer paces used. In this instance, it is two paces; 22 paces (of 30 inches each) minus 20 (of 33 inches each) leave the given difference of 2 paces.

4. From which circumstance it is clear, that all columns required to change their direction by bringing a shoulder forward, must not only start at the same step, but also continue it throughout; it being certain that lengthening the step at the wheel destroys the proportion of 11 to 7, and infallibly prevents the rear division from advancing to the wheeling point, and then wheeling the number of paces, that the arc of the quarter circle exceeds the radius, during the time the leading division completes the quarter circle.

With reference to the foregoing observations on wheeling, with which our correspondents have favoured us, we take leave to submit, for their consideration, the following extract from "Suasso on Infantry Movements."

As the wheelings on the march are chiefly confined, in their application, to the changes in the direction of the path pursued when in open column, their use will seldom present itself above the front of a company; but were a more considerable body thus made to operate, it would offer no variety in the execution; an object, however, of greater magnitude, and which, as such, claims special attention, is, the adequate degree of vivacity with which those changes should be accomplished, so as not to impede the progress of the succeeding division; were the wheel of that preceding not concluded on the approach of the next, it must inevitably cause a delay, which, if repeated, cannot fail to occasion considerable retardment on the march, and create disorder, by keeping several divisions in mass at the point of alteration. To investigate a

matter of such immediate influence appears necessary, particularly as, from having escaped notice, it has been not unfrequently disregarded. Practice, though it may enable us to discover the faults, from neglecting the causes from which they spring, will seldom alone qualify us to suggest the means to remove the evil: it is to theory, therefore, we must apply. By lighting the torch of ratiocination, we shall no longer wander in the dark.

On the Degree of Quickness required while Wheeling on the March.

In entering upon this topick, we must first recal to the mind what has been said precedently, respecting the existing proportions between the line traced out by the wheeling flank, when performing the quarter of the circle, and the front of the body operating. Now supposing the divisions of a column to be equalized, as the ground moved over by the second division to reach the wheeling point is equal to the front of the 1st division, were both the cadence and length of step preserved while going round the arch, it would be completed by the first division but by (about) two-thirds; when the following division arrives at the wheeling point, and before that second division could even so much as commence to circle round, the third would have advanced too far upon it—a faulty manner of execution, which must expose to delay, and, from the want of principle, inevitably throw a column into confusion, whenever its direction of march is attempted to undergo an alteration. The difficulty, it is true, will be less when the arch described is below the quarter of the periphery; but were the portion of the circumference more considerable, the dilemma would still be greater, and the rear divisions be compelled still longer to hang at the point of alteration, and this increase in proportion as the arch of the circumference to be traced out is greater.

To obviate this defect, which, by the by, was the great stumbling-block of former tacticks, the expedients devised have been, to perform the circular at an accelerated cadence; 2dly, to step over it at an increased length of pace; and *lastly*, to remove the pivot man sufficiently from the point of alteration to leave it free in time for the next division, so that, on arrival at the same, it may immediately commence its wheel, notwithstanding that in front has not entirely concluded its circular motion.

To the examination of these expedients, we shall now proceed, but premise by a few remarks, which, in tending to unfold the subject under discussion, will materially assist in its elucidation.

First, We shall observe, that the cadence in which the transition is effected, by the successive wheel of the divisions when in column, must at least be one half quicker than that the column is proceeding on, and that still a speedier execution is requisite to provide for the time necessarily lost in pronouncing the directions, by which the change is first

signified, and then concluded, as well as for the momentary stop which must inevitably separate the last command from that delivered to resume the advance.

Second, That additional advantage might be derived, in tracing out the arch, by the outward wheeling man lengthening his pace, which, by decreasing the number of steps he is to perform, must necessarily favourably operate, and shorten the duration of the evolution.

Third, That all changes which amount to more than the quarter of the circle, demand more time for completion than those limited to 90 degrees; and that, on the contrary, all alterations in the direction, less considerable than the quarter of the circumference, by offering a reduced line, must be sooner accomplished.

Fourth, As the time gained by the additional degree of quickness and length of pace, performed at while wheeling, must bear a proportion to the curve traced out by the same wheel, and be more considerable, as this line is more extended, the circular movement presents, so far as it relates to time, an advantage from being executed on a larger front, and is easier to perform on a front of 20 than on a front of 10 files.

Fifth, That in all those cases where either the additional celerity in which the column advances, or the increased portion of the circle to be described renders both the expedients of increase in the length of pace and of a quicker cadence unavailing, the difficulty must be obviated, by allowing the pivot man, while in process, to leave the point of entry behind, so as to clear it sufficiently as not to prevent the next division from taking up the circular march the instant it reaches the ground of alteration.

Of the three means, we have already noticed that two have been adopted in the British army, in which the cadence is advanced to 120 paces in the minute, and the arch traced out at the stretched pace of 33 inches; it is, therefore, from their joint combination, that a timely conclusion of the wheel is to be expected: whether or no those means alone answer that end, we will now ascertain, and illustrate the subject by an example drawn from the late Rules and Regulations. Suppose, accordingly, that a body of 10 files is to execute the quarter wheel, we shall find the front of the 1st division to be equal to 10 (the number of men) times 22 (the number of inches allowed to each in the ranks), or 220 inches, which, divided by 30, the length of the common pace, will establish to 7 $\frac{1}{3}$ (the quotient resulting from it) the number of paces contained in the front of the first division, or, what is the same, the number of paces the second division will have to perform, to move over the ground to the wheeling point. Now, this being ascertained, since the same ratio must exist between the ordinary and the quick cadence as betwixt the number of steps taken under the influence of the former, to those, within the same time, taken under the influence of the latter pace, the following

proportion will arise: $75 : 120 :: 7\frac{1}{2} : 11\frac{1}{2}$; and $11\frac{1}{2}$ become the number of steps of 30 inches, which will be performed within the period, the $7\frac{1}{2}$ are taken at the ordinary pace by the second division, a number over and above that immediately required, as, by the rule exhibited before, the quarter circle is in the present instance completed in 10, as many paces as there are men in the front rank; hence, besides the advantages accruing from the additional three inches of the lengthened step, one pace and a third of a pace remain over, to answer for the commands, the instantaneous stop, &c; and the expedient provides for a pause, which, in the above proportion, is always one-sixth of the time taken up in tracing out the quarter of the periphery; this pause therefore increases or diminishes, according as the operating front is more or less considerable; but from its being barely sufficient, when executed by 10 files, which the adduced case must fully exemplify, how much more exactness will not be required, when, for five files, $26''$, scarcely half a second, will be left, to account for the unavoidable contingencies of commands, delays, and the like, and how much the dilemma still increases when the circular movement described is above the quarter of the circumference, is obvious, since inefficient then for 10, nay, even for 15 files, a cadence infinitely quicker than that established of 120 paces in the minute, must become indispensable to disengage the operating division in time, so as not to impede the march of that following.

Yet, if it be admitted, and it certainly may, that our mode of wheeling, under the particular disadvantage of a small front, or considerable arch, generally answers when the column marches at the ordinary time, the contrivance is evidently defective, when the column proceeds in the quicker cadence, where, inadequate to remove the delay, a time of march hurried to 162 paces in the minute (42 more than that allowed) would merely suffice to step over the ground; and it would require the alteration to be made at the rate of 175 steps in the minute, to obtain the proportion now observed between the degree of celerity the column advances in the ordinary time, and the divisions effect their change in the direction of march*. Now, as we have already seen that the time, under the latter proportion of $75 : 120$, offers nothing superfluous, and is even sometimes hardly equal to meet the exigency, a less active cadence than 175 cannot be resorted to with security, or without exposing to the defect of extension whenever the column steps under the influence of the accelerated cadence.

* Mr. Russell, who, in his *Tactical Regulator*, has most diligently searched and most ably illustrated all that relates to the time, in the exercise, says, (part i. circumstances in wheeling,) that when moving in the quick cadence, the wheel of the quarter circle would require, for 20 files, to be taken at the rate of six miles and a quarter in an hour; for 15 files, at the rate of about eight miles in an hour; and to be taken at the rate of nine miles and three furlongs an hour, for the reduced front of 10 files.

Having thus concluded what relates to the British, and displayed the inefficiency of the means employed to restrain the wheeling*, while on the march, within its proper duration, we shall take a view of the other armies, and see how far they have been successful in this particular. Beginning by the Austrians, we shall discover in their common wheel but little or no difference from our own practice, with which they likewise coincide, as to the accelerated pace of performance; but as nothing is said respecting the wheeling man's stepping out, it does not even present the advantage of our circular motion: however, this becomes immaterial with them, as the application of this movement is altogether confined to the alterations on the march of a column, when proceeding in the ordinary time; and that, whenever the advance is made at a quicker pace, they invariably effect them by the *beweglichen pivots* (a wheel on a moveable pivot), in which, without altering the cadence, the whole remain in motion, and pivot man steps short, so as to clear the ground in time, and before the approach of the next division †. As to the Danes, their pivot man faces, and the rest hurry their wheel, by running over the ground; this much removes the difficulty as to time, but produces a disorderly execution.

The measures adopted by the French vary again from those mentioned: they make a distinction in their changes of direction, and admit of a different evolution, when they take place towards the pivot, or when they recur to the reverse flank of the column: when the changes are on the regulating side, the guide, or pivot man, on reaching the marker, who shows the spot where the alteration in the march is to take place, without altering his pace either in length or cadence, turns, and immediately pursues his advance straight forward in the new alignment, while the rest, in bringing their outward shoulders forwards and towards him, hurry their steps, to endeavour quickly and individually to regain their dress in the line with him. This movement they call *changer de direction sur le côté du guide*.

But were the alteration in the direction to the reverse side, they then have recourse to the wheel, which they perform at the cadence proceeded on in column; the pivot man, however, keeps in motion, but reduces his step in length to six inches ‡; both these ex-

* This alludes to the Rules and Regulations; as the mode of wheeling on a moveable pivot has undergone some alterations by the F. E. and E. and may be now substituted to the regular wheel, whenever, from deficiency of time, the use of the latter becomes inappropriate.

† This method of wheeling of the Austrians, as well as that explained hereafter for the Prussians, must not be mistaken for the movement explained in the R. and R. under the name of wheels on a moveable pivot, as the following will fully illustrate.

‡ F. R. école du soldat, 260—270; école de peloton, 180—197. But, were a column of platoons thus to alter its direction of march to the reverse side,

pedients provide for the regular advance, as to time, since, by both, the wheeling point is disengaged, previous to the arrival of the succeeding division; but, besides the double mode of operating, to which it compels for manœuvres evidently the same, and which, detrimental to simplicity, contravenes a fundamental principle of the movements *: their *changer de direction sur le côté du guide*, used when the alteration is on the proper pivot side, are liable to promote unsteadiness in the execution, a particular, as we have already had occasion to mention, not always sufficiently attended to by the able compiler of their *Règlement*†. As to their mode of wheeling, on the reverse flank, though it promises a more orderly performance, it is still not unexceptionable, as the touch of the elbow is removed in it, from the pivot to the wheeling flank man, who is, therefore, no longer restrained in his curb. What has been said of the French, likewise applies to the troops of the Netherlands, whose performance is perfectly similar in those manœuvres‡.

But of all the modes hitherto described, none appears to possess the merit of that employed by the Prussians: applicable to every case on the march, this general adoption is obtained without any intrusion upon the system; the principles of the wheel remain untouched, the sight in it is directed to the wheeling flank, the feeling is preserved on the pivot side, and, without any interference with the cadence, the evolution brought within its proper period of performance, by the mere attention in the pivot man, whilst circling round, to advance sufficiently to clear in time the wheeling point, so as to allow the following division to move over the arch the very instant it gains the ground of

while placed at half distance, the pivot man would have to increase his pace from six inches to a foot, to clear the wheeling point in time.—*Ecole de bataillon*, 243.

* It is a fundamental rule in tactics, that the same operation should never offer two ways of execution, as one, evidently superfluous, ought, as such, to be expunged.

† Montecuculi has observed, in his *Memoirs*, that the three great necessities to carry on a war, were—money, money, and again money; and thus we may emphatically say of the infantry tactics, that the three essential particulars in them are—compactness, compactness, and again compactness; for it is to that important object the choice in the selection of the movements should be almost wholly directed, as well as every minutiae in the performance and in the instruction should principally tend; it is in that proportion in which an infantry has acquired this most valuable qualification, and to the degree in which they can maintain it, by presenting an orderly body before the enemy, that the fairest estimation of its value may be drawn. This consideration cannot sufficiently be impressed on the minds of those entrusted with the care of framing regulations for the field movements of that corps, where every direction, how insignificant soever it may appear, must immediately operate, and either promote or counteract this important feature in the discipline of troops.

‡ R. I. der N. soldaten school, No. 275—284; pelotons school, 180—197.

alteration ; yet, notwithstanding the facility this manner exhibits, was the British mode of operating preferred, and an objection raised, that the pivot in the Prussian wheel, by tracing out an undefined arch, still leaves the curb undetermined, a circumstance which may tend to uncertainty while in motion ; and, therefore, not sufficiently protect uniformity in the circular line, pursued by the successive and following divisions ; which, however, is here of no great consequence ; our present evolution may be easily retained, with the additional direction, for the pivot man, after facing, to advance two paces into the new line of march, or so soon as the removal of the division in front will allow him to do so, as this will most effectually dispel all apprehension of delay and check at the point of entry*, and, by the trifling amendment proposed, remove every difficulty now experienced, without relinquishing a method, in which the arch, from being defined, presents a most steady and admits of a most regular performance.

* This method will answer even for the front of four files under the quick cadence, as the circular then concluded in four paces, will admit the two motions performed in facing, and the two steps to the front. The preceding section will, therefore, have resumed the advance about the time the next pivot man has completed his change of front, so that, without experiencing any delay, he may take his two steps forwards. Where the column moves in sections of three, the alterations in the line of march must be accomplished as when proceeding in files.

ARTICLE VI.

PROVING POWDER AT MADRAS.



To the Editor of the Military Repository.

SIR,

Your predecessor, in page 263 of his 2d No. has given an account of proving powder at this Presidency, which does not agree with the present prevalent practice, and which I do not believe correctly describes any system ever regularly established within the provinces of this Government.

Wishing to correct the error unto which he was, I am sure, on this point unwittingly led, I beg to supply you with the following information.

The piece of ordnance used for powder proof at St. Thomas' Mount, Madras, is a *brass* 10 inch Europe cast mortar, weighing 12 cwt. 1 qr. 21 lbs.

	Feet.	Inches.	Tenths.
Exterior length of the mortar,	2	8	$7\frac{1}{2}$
Diameter of bore about	0	10	$\frac{3}{4}$

with a chamber of a conical shape, which will contain about 4 lbs. of gunpowder, the mouth of the chamber being 5 inches wide. The weight of the bed is 14 cwt. that of the shell 96 lbs. and its diameter about 9.85 inches. At 45 of elevation, should the shell, with a charge of 2 lbs. not be thrown 1000 yards, the powder is not considered serviceable. The charge of powder for proof is first accurately weighed. It is then put into a powder measure, and by that means into the chamber, where it is well set up by the hand.

The use, however, of a *brass* mortar at this Presidency for powder proof (the chamber of which is liable to be

affected by the large charges generally used in proof) seems as objectionable as the former use of brass, or "bell metal" balls for powder proof in Bengal.

I am told, that 8 inch shells have, in Bengal, given place, in powder proof, to solid cast iron 68 lb. balls, well turned, and of the proper maximum diameter, viz. 7-95 inches.

I should be glad to find these balls, with the cast iron Gower 8 inch mortar and bed, established at all the three Presidencies, for powder proof; for I do not believe any more durable, correct, or convenient means could be found better adapted for that purpose.

A *large* charge, though attended with the delay consequent upon a long range, should, along with a *small* and *medium* charge, be invariably used in all comparative proofs of gunpowder. Perhaps a charge of 2 oz. with one of 1, and another of 2 lbs. might answer this object well with the 8 inch Gower.

I am,

Sir,

Your obedient Servant,

Madras, April 1827.

AN ARTILLERYMAN.

ARTICLE VII.

ON SUPERCESSION IN RANK.



To the Editor of the Indian Military Repository.

SIR,

The positive prohibition by the Honourable Court of Directors to their officers obtaining the rank of Captain previously to 15 years service, from the date of their first commission, and the result of some consequent representations forwarded to the Honourable Court, have I imagine destroyed all hope of fully recovering one of those privileges, which in some cases redeemed the slowness of promotion by seniority, and in expectation of which every officer appointed antecedent to the promulgation of the prohibitory order, entered the service. To enumerate the disadvantages under which these officers labour, in comparison with those of His Majesty's service, in which the rank (if it can be so called) of cadet is not acknowledged, as it is in the Company's, would, from what has already appeared, be needless; but I have not as yet observed any notice made of the injury the order entails on members of our own service; and upon this plea I place my excuse for reverting to the subject, after the decided manner in which it has been laid aside.

In 1809, the Honourable Company deemed it expedient to send out a large proportion of infantry cadets, whether for the purpose of making themselves more competent to command, by studying the languages and their duties at Barasut, until vacancies in corps occurred for them, or to be in readiness to secure the efficiency of the army, is immaterial. But the fact is certain, that those cadets received pay from the Honourable Company,

for services which they were ready to perform, and which many of them actually did perform for months with corps; still those officers are superseded by cadets of the season after them! nay of even nine years after them!!

Four officers of the Regiment of Artillery of the season of 1810* have received the brevet rank of captain from Nov. 1825, thus superseding the cadets of 1809, who have not yet been so fortunate as to attain the regimental captaincy, and who will not by the late orders be entitled to the Brevet rank for eight and ten months after their more fortunate juniors. The in general distinct nature of the two arms of the service cannot, I presume, be adduced as a reason for the supercession. Though it may fairly be urged, that the few artillery cadets required to fill up the vacancies in that branch made it unnecessary to send out any in excess to the number required, still this would have been a matter of no consequence, had not the prohibitory orders destroyed that advantage which priority of nomination at home, conferred in *all* branches of the service. Further, a cadet of 1818, has succeeded to the regimental captaincy, in what is called a lucky corps, perhaps, during the period made void by these prohibitory orders, and has superseded in consequence some of those who entered the service nine years before him†!

* We believe inaccuracies have obtained in quoting the standing of artillery cadets, all of them being *cadets*, from the period of their appointment as such to Woolwich or Addiscombe.—ED.

† A cadet of 1808 has been thus superseded by one of 1818. Since regimental and battalion rise successively took place in 1796 and 1824 of one general gradation list, the service of the East India Company, we think, can no longer be considered generally as one of strict seniority rise, although that rule obtains in the lower grades of regimental promotion. To complain of the supercession of one particular class of cadets, by any individual, or other class of cadets, more especially of a different and distinct branch of the army, whether of the same, or of another presidency, seems therefore only to complain, that a chequered regimental promotion, and a division of the army into distinct corps, branches, and presidencies prevails. The measure of promoting subaltern officers (not cadets) of 15 years service, to the army rank of captain, was adopted as a means of in some degree advancing in army rank those who might have been unfortunate in regimental promotion. But neither that, or any other measure, short of a general gradation rise, could possibly have prevented the occasional supercession of individuals, which now (since each battalion has been made a regiment) must be more frequent and unequal than ever. If the cadets of 1809, alluded to by our correspondent, received pay as subaltern officers on joining corps, and had

Notwithstanding the injunction imposed at the Horse Guards, and the compliance given to it at the India House, I cannot but indulge an expectation that the order and the subject will be again taken up and re-investigated by the Honourable Court, so far as it concerns the interests of their own officers. Not for a moment do I wish that my companions in the service should be deprived of their good fortune, for promotion comes slow enough at all times to the many; but merely that those who have been less fortunate by the possible and to-be-expected exigencies of the Honourable Company's service, should not suffer further by the retrospective effect of an order embracing His Majesty's.

I have the honor to be,

Sir,

Your most obedient Servant,

A LIEUT. H. C. S.

their period of Indian service for retiring pension running on by being sent out too early to India, without waiting for vacancies, have they not been gainers? or would they have preferred being, like the artillery cadets, kept a year or two longer in England, losing both Indian allowances and service, and being thrown as to rank into the cadets of the next year?—Ed.

THE
BRITISH INDIAN
Military Repository.

VOL. VI. PART III.

ARTICLE I.

EQUIPMENT OF THE ROYAL ARTILLERY.

[Continued from page 179.]



CONCLUSION.

THE Sub-Committee, in closing their Report, have classed together some miscellaneous observations, which have either been omitted in their proper places, or have arisen from a review of the whole subject submitted to their consideration.

In considering the subject of Field ordnance, the Sub-Committee beg to express their opinion, that it would be for the benefit of the service that the following changes were made.

1st. That the charges for all field guns were reduced to one-fourth of the shot's nominal weight. This has become the more desirable, not only from the acknowledged strength and excellence of the powder used in His Majesty's service, but from the late diminution of windage to one-tenth of an inch. Charges of one-fourth of the shot's weight, whilst fully equal to any ranges which can be re-

quired in the field, would render the action and recoil of the guns in firing more moderate and easy to their carriages, occasioning in consequence less wear and tear, would produce more accurate firing, and also an economy of powder, which is now so well guarded in the boxes against deterioration, as to render an excess of charge from this idea by no means necessary.

2d. That in howitzers for field services cast in future, their bores correspond correctly with those of guns of the same nominal calibres.

This would render the 24-pounder and 12-pounder howitzers available for ricochet firing, as well as for the application of red hot shot when circumstances might require it, as in the instance of burning buildings converted into temporary posts.

3d. That henceforth round shot, spherical case shot, and common shells, be cast correctly of the same diameter. This, it is considered, would be more simple than the trifling difference of diameter which at present exists, but of which the utility is not apparent.

Rockets. As it appears to the Sub-Committee that they ought not to leave the subject of rockets altogether unnoticed, they beg to observe, without entering into the question of the propriety of a corps used solely for the rocket service, that as this corps cannot be in all places and situations where rockets may be useful, it appears to be very desirable that the artillery soldiers generally should be instructed, as a regular part of their duty, in the use of this arm, with regard to which there is at present a mystery. There is also apparently a great variety of natures of rockets, with the proposed applications of which the corps of artillery is entirely unacquainted.

It is therefore much to be wished, that the natures and application of rockets most suitable to field and bombard-
ing operations should be ascertained by a course of ex-

periments, and that regular instructions should be drawn up, and an exercise formed for the men who in the course of their duty may be called upon to use these auxiliary weapons.

The Sub-Committee cannot but think that rockets would be made more easily efficient, if the number of their varieties were reduced to two, or at most three natures for the field, and one or two natures for bombarding, and if the machinery used were as simple as possible, and the carriage as nearly assimilated as could be to those used for the transport of ammunition in the service generally.

The Sub-Committee beg further to express their opinion, 1st. That in future artillery equipments, spare harness should be allowed in the proportion per field battery of two horses leading harness and four horses wheel harness.

That no spare harness is necessary with battering train equipments, as the whole of the allotted proportion of harness can hardly under any circumstances be expected to be in use at the same time.

2d. That a spare linchpin and washer, and also a leather bucket be allowed to each carriage.

3d. That two leather cartouches be allowed per field battery, to be carried in the store waggon, in lieu of those hitherto allowed per gun.

4th. That the present stuffing of the ammunition boxes be discontinued.

5th. That blankets be in future issued, so as to allow on field service one blanket for each horse in harness: the driver's blankets suffices for the horse on which the man rides; but one is also required for the off horse, and is necessary to prevent the horse from being galled by the harness, which otherwise is the case notwithstanding every

precaution. But it appears to the Sub-Committee that the blankets now issued are unnecessarily large, and that a blanket of $2\frac{1}{2}$ yards by $1\frac{1}{2}$ yards would be more convenient, and less expensive.

6th. This galling of horses, both with riding and draft, is in great measure owing to the weight of the soldier's saddle-bag, which from the quantity of articles contained in the kitt, becomes inconvenient, both in weight and size.

7th. The Sub-Committee therefore beg strongly to recommend, that a diminution of the kitt be made, so as to reduce the size of the artilleryman's knapsack to that of the infantry soldiers ; and they consider that great good would accrue, if the saddle-bags of the mounted men of the artillery service were made smaller than at present, and so shaped as to allow of their being easily carried by the men when dismounted, as is so frequently the case.

It appears to the Sub-Committee, that to attain this desirable end, it is only necessary to reduce the kitt of the mounted men, and that the saddle-bag be made of the shape used in the hussar service, and that its material be cloth or dyed canvas, instead of leather, as at present. If the dyed canvas should prove as serviceable as there is reason to expect, it appears to the Sub-Committee that the oil-decks issued to all mounted men might be entirely dispensed with.

8th. In reference to the personal appointments of the mounted men, the Sub-Committee cannot help considering, that the drivers should be furnished with cloaks similar to those allowed to the gunners of horse artillery, the great coats hitherto issued to the drivers being very inferior in point of comfort. The clothing and arming of this valuable class of men has been already noticed.

The Sub-Committee, in concluding, beg to state, that although there are many points which from experience it

has become advisable to alter or improve, they nevertheless feel themselves called upon to notice the very efficient state in which every equipment that has fallen under their examination has been sent out of late years.

16th August,

OBSERVATIONS BY THE MASTER GENERAL
EQUIPMENTS, AND

REFERENCE.

"Composition of batteries.
The committee have not deviated in the equipments, &c."

OBSERVATIONS.

1. I believe the batteries should consist of eight pieces, that is, of 6 guns and 2 howitzers, and that a company of artillery is equal to this number of pieces.

If this last position be true, or if a company of artillery is equal to the management of more than the battery, it ought to consist of more, or in other words, of the number which a company of artillery of say 110 men can manage.

"Spherical case 9 pounders $\frac{1}{2}$ of total."

2. I doubt this; I should say one sixth.

"Such are the reasons."

3. This is a very serious question, and the Committee have exhausted the subject, at least on one side. In some seats of war, I am certain that the horses asked for are necessary, but it is equally obvious that they are more than are used for the same pieces of ordnance by any other nation in Europe. It is true, that our guns and carriages are heavier than others; but then our horse is a great deal better and more powerful, if taken care of. Upon the whole, I am for keeping the rule as it is, making the spare horses more numerous on foreign service, and really efficient, in order to provide for those circumstances which might occasion an exception.

1820.

ON THE COMMITTEE'S REPORT ON FIELD POINTS COMBINED THEREWITH.



REPLY.

A company of artillery is certainly more than equal to the management of a battery of six pieces, and could with ease manage a battery of eight pieces. Indeed in the whole system of allotting a company per field battery, it has always been understood that the surplus men should be applicable to the general service of the artillery, such as reserves of gun ammunition, and musquet ball cartridges, escorts, depôts, &c. &c. on which accounts it has been considered unadvisable to calculate too nicely as to the number of men, especially in the first formation of a corps of artillery for an army: it will, however, be easy to apply a company of artillery of the present assumed strength to a battery of 8 pieces, if his Grace shall determine that batteries shall be composed of that number.

The Committee have already very considerably reduced the proportion of spherical case with field guns, and fully concur in the further reduction proposed by his Grace.

This subject admits of discussion. The Committee are sensible that they have extra horses, the whole of the ammunition carriages and other carriages of a battery: they have done this with the view of rendering the batteries efficient in the most extended meaning of the term; and they still consider themselves as preserving a line of real economy in earnestly desiring to retain the proposed number of horses for the guns, and one waggon for each, confirming the reduced numbers to the other carriages, and decreasing the spare horses from $\frac{1}{5}$ to $\frac{1}{8}$ or $\frac{1}{10}$.

They hope by their modification to meet his Grace's wishes, and on receiving his Grace's sanction for their adoption, can immediately proceed in drawing out the detailed scales of equipment.

REMARKS

BY A MEMBER.

This I heartily agree to, my own speculations on the formation of field batteries, having been for eight pieces, the manuscripts of which I have.

It forms a battery, which on first equipment might be deemed sufficient to accompany a division on expeditionary service.

I should very much regret to see a reduction of the spare horses further than $\frac{1}{5}$. $\frac{1}{10}$ has never been found too great a number, nor do I think it ever will be, except (as I believe is the case in the French service) moveable depôts of remount were established in the field, to which all sick horses are sent, and the *chevaux haut le pied* are continued to a small number, actually carrying harness, and replaced as required. In Portugal and Spain, the proportion of spare was $\frac{1}{3}$; yet in the autumn of 1812, the proportion of sick horses to the whole in the country, was $\frac{1}{3}$, as appears by the return sent home. In other respects I agree with this reply.

REFERENCE.

“ With respect to artificers, the shoeing smiths have been taken at one to about 40 horses ; the other artificers generally at two of each per battery.”

The number of officers, non-commissioned officers, and gunners of artillery on the scale established in 1807, being much too low for the service of a field battery.”

“ It is considered from the nature of the service.”

OBSERVATION.

4. How is this in the cavalry ?

I doubt this ; batteries are seldom quite alone and detached, and the strength of one can easily be applied to another.

5. I concur in the principle, that a company of artillery, of which in my opinion the gunner drivers ought to form an integral part, ought to be sufficient for a battery, of which a 9-pounder battery, for instance, ought to consist of 8 pieces. Those of larger calibre might have fewer, those of smaller more.

There is one point in all this which has not been attended to, and that is expense.

We must take care that we do not make this branch of the service so expensive, as that no country, even this, can bear the expense of maintaining in the field an efficient establishment of it.

For that reason alone I should wish the whole of this to be revised.

7. I have already stated my opinion of the formation of the company of artillery and gunner drivers. This would be applicable to all situations in the British service, as I can shew, whether of siege, island, or colonial service, musquet ammunition, train for sieges, or reserve.

REPLY.

REMARKS.

The mode of shoeing in the cavalry differs essentially from that followed with artillery, which is very superior to it. The cavalry farriers retain on foreign service the home allowance of $\frac{1}{2}$ d. per day per horse, finding the iron. The cavalry are in consequence frequently ill shod. The allowance of one shoeing smith to 40 horses is known to be reasonable: a smaller allowance would lead to embarrassment in the event of sickness or casualty among the shoeing smiths, which must occasionally be expected.

The two artificers (wheelers and collar makers) will probably not be considered too much, as the carriages and harness are increased.

If the suggestion of encouraging artificers among the gunners should be attended to, it is clear that little or no expense could accrue to the public, as the second workman would only receive a trifling additional allowance when employed in that capacity.

The Committee fully concur in the idea, that the drivers should form an integral part of a company on field service. The batteries of light pieces, as 6-pounder, might also readily consist of 6 pieces of ordnance only, and those of heavy pieces, as 18-pounder, of 4.

In this case, the totality of a company not being required with a battery of light pieces, the spare men would naturally be applied to the reserves of ammunition and other duties, which, though not, strictly speaking, duties with field batteries, are nevertheless essentially useful.

The Committee are fully sensible how necessary it is to attend to expense; and on receiving his Grace's directions upon what principle field batteries shall be formed, pledge themselves to make such reduction in the whole scale of equipments, as will shew how desirous they are of every economy which shall yet leave the field artillery in possession of that efficiency, without which the good of the service would not in their opinion be consulted.

The Committee perfectly agree with his Grace's view of this subject; and if his Grace shall permit them, will point out the mode in which it appears to them that his Grace's wishes may readily be carried into execution.

REFERENCE.

" Without determining the question of the propriety of mounting the whole of the gunners, to which the Committee feel much disposed, instead of arrying any on the carriages."

" The Committee have drawn out the proportion of ammunition and stores."

" A portion of the reserve gun ammunition, consisting of a waggon for every two pieces of ordnance."

" The reserve of small arm ammunition to be conveyed in 100 limber waggons."

" Both the species of rifle ammunition, it is true, are for the same arm; but the different rifle corps did not accord as to the use, some preferring," &c.

" They wish, therefore, to recommend the adoption of the common deal box firmly put together."

OBSERVATION.

8. See remark on expense.

9. I may here observe, that I don't see why the quantity of ammunition carried with a battery of light pieces should be greater than that carried with ordnance of heavier calibre.

Take the 9-pounder, for instance, as the standard of field ordnance, and suppose 150 rounds a gun sufficient for a battle, why should a 6-pounder or a 3-pounder have more?

A 6-pounder or 3-pounder will require fewer carriages to carry that quantity; but that is so much the better.

10. There being enough for one battle with the batteries, there ought to be enough for a second with the army in the park or reserves, and enough for a third in a field depôt, which would be fixed according to the disposition of the Commander in Chief.

11. This would do with 1,20,000 rounds in depôt.

12. This is difficult, from the occasional use of the rifle as a musquet.

2d. When used as a musquet, it is put in with a common cartridge; but even in this case, it ought to be the largest ball which the pieces could receive.

1st. When used as a rifle, the ball is larger, and is forced in the piece.

I should doubt the use of the fustian, it must be liable to leave fire in the barrel.

13. It should be strong enough to be caulked.

REPLY.

REMARK.

The Committee have no wish to urge this point, although they consider, that reduction in other parts of the equipment may induce his Grace to think favourably of this suggestion, which is not hastily offered, nor without much reflection.

Consider 150 rounds as the quantity wished to be carried per gun with a battery, the carriages attendant on a 6-pounder or 3-pounder battery will readily be decreased. It is however observable, that light pieces are both fired somewhat faster, and are more frequently liable to be called into action than pieces of higher calibre; for light guns are generally with advanced corps, and are frequently engaged in operations preparatory to battle, when there may not be time or opportunity to replace their ammunition; and further, one waggon per gun affords the essential advantage of occasionally transporting the gunners for rapid movements.

The Committee here beg leave to observe, that according to his Grace's allotment of ammunition, an increase of about 30 ammunition waggons will be required for the moveable equipments.

The dépôt would add 50 rounds per man to the 140 rounds already allotted, making the proportion as follows:

Carried by the soldiers, ..	60 rounds.
Reserves of ball cartridges,	80 ditto.
In dépôt,	50 ditto.

Total rounds per man 190

The Committee have strongly recommended experiments, both with rifles and small arms generally, as they consider the subject to be very imperfectly understood, and to require more simplicity in its general arrangement.

In the opinion of artificers, caulking is not desirable. But the obvious intention and wish being to protect the ammunition from wet, it is believed that the present box, as now altered, will fully answer that purpose.

Cartridges have been prepared in paper prepared with boiled oil, which have no unpleasant taste or smell, do not foul the barrel, and have been fired without inconvenience, after an immersion of six hours in water.

REFERENCE.

"As a 12-pounder of this description is considered to be sufficiently powerful," &c.

"In arranging the proportion of ammunition," &c.

"The Committee therefore, with a view of remedying the serious objections to the powder barrels for a protracted land carriage," &c.

"The Committee also strongly recommend, that in future the spherical fuze holes."

"In the annexed equipment, there is a Flanders pattern wagon for every piece of ordnance."

"A canvas nose-bag to be substituted for the hair nose-bags hitherto used."

OBSERVATION.

14. I doubt this, considering the strength of modern parapets and traverses.

15. I believe 1000 rounds each gun, but more guns would be better and cheap-

16. Would not the caulked box answer, and be lighter and less expensive, and less liable to be stolen?

17. Is this opinion the result of experiments? I thought the contrary was the true doctrine.

18. Whether it would not be desirable always to have a moveable equipment for one day's firing, say 100 rounds with each gun.

19. Is this right?

REPLY.

REMARK.

These guns have been assumed on the qualified supposition, that there is an adequate number of 24-pounders for the more serious operations of a siege, and are rather taken on account of the facility of their movement, and the lightness of their ammunition for the purposes of annoying and dismounting the enemy's guns by direct fire, than for the exclusive purpose of ricochet, which latter application of projectiles, it is believed, will rarely effect breach in the present state of defensive warfare, except when used with the heaviest ordnance, such as 10 and 8-inch howitzers.

In many cases, more guns with the same quantity of ammunition would be better and cheaper.

But as each battering train must be formed in reference to its particular destination, little more than a general outline subject to modification could be traced.

The desiderata required are strength, simplicity, durability and stowage; all these, together with the security to the powder, are combined in the proposed box, which also contains nothing on account of which it may be liable to be stolen. It is considered by artificers the best of several boxes made for the purpose, and is nearly similar to that adopted for the navy.

The fuze holes were originally screwed to correspond with screwed fuzes, and should have been left off at the time the idea of these fuzes was abandoned.

The experiments of last year fully bear out this.

It would evidently be most desirable to have a moveable equipment of a day's firing nearly; but this appearing to the Committee to make a considerable addition to the Battering Train equipment, though contemplated, was given up: it can now be readily restored.

The horses' hair nose-bag soon becomes dirty; if washed, wears out, and it is in truth an article of constant supply.

It is believed that the canvas bag is both cheaper and more durable.

WEIGHTS OF FIELD CARRIAGES.

NATURE OF CARRIAGES, &c.		Number of Rounds.	WEIGHTS.					
			Gun, Carriage, Limber, and Ammunition.			Total.		
			Cwt.	Qrs.	lb.	Cwt.	Qrs.	lb.
12 Pounder, medium,	Guns,		18	0	0			
	Carriage,...		12	3	9			
	Limber,		8	3	6			
	Ammunition,	18	2	2	8	42	0	2
Ammunition Limber Carriage, 12 Pounder medium,	Body,		8	3	10			
	Limber,		8	1	4			
	Ammunition,	80	11	1	20	30	2	15
	Spare Wheel,		2	0	13			
12 Pounder, light,	Gun,		12	0	0			
	Carriage,...		11	2	9			
	Limber,		8	1	5	35	0	18
	Ammunition,	32	4	1	4			
Ammunition Limber Carriage, 12 Pounder light,	Body,		8	3	20			
	Limber,		8	1	5			
	Ammunition,	80	10	3	0	30	0	16
	Spare Wheel,		2	0	13			
9 Pounder,	Gun,		13	2	0			
	Carriage,...		11	3	6			
	Limber,		8	0	17	37	0	5
	Ammunition,	32	3	2	10			
Ammunition Limber Carriage, 9 Pounder,	Body,		8	3	24			
	Limber,		8	0	17			
	Ammunition,	94	10	2	0	29	2	26
	Spare Wheel,		2	0	13			
6 Pounder, heavy,	Gun,		12	1	0			
	Carriage,...		11	0	26			
	Limber,		8	0	24	35	1	4
	Ammunition,	50	3	2	8			
Ammunition Limber Carriage, 6 Pounder heavy,	Body,		8	3	21			
	Limber, ...		8	0	24			
	Ammunition,	150	10	3	0	30	0	2
	Spare Wheel,		2	0	13			
6 Pounder, light,	Gun,		6	0	0			
	Carriage, ..		8	3	6			
	Limber,		8	0	5	26	0	15
	Ammunition,	46	3	1	4			
Ammunition Limber Carriage, 6 Pr. light,	Body,		8	3	21			
	Limber,		8	0	5			
	Ammunition,	148	10	2	8	27	2	6
	Spare Wheel,		1	3	13			
3 Pounder, heavy,	Gun,		6	0	0			
	Carriage,...		8	1	24			
	Limber,		8	0	6	25	2	17
	Ammunition,	78	3	0	15			
Ammunition Limber Carriage, 3 Pr. heavy	Body,		8	3	18			
	Limber,		8	0	6			
	Ammunition,	238	9	2	7	26	2	3
	Spare Wheel,		1	3	1			

6lb each round.

16 "

15 "

15 "

12½ "

12½ "

8 "

8 "

8 "

4½ "

NATURE OF CARRIAGES, &c.		Number of Rounds.	WEIGHTS.					
			Howitzer, Carriage, Limber, and Ammunition.			Total.		
			Cwt.	Qrs.	lbs.	Cwt.	Qrs.	lbs.
3 Pounder, light,	{ Gun,		3	0	0	11	1	24
	{ Carriage,....		4	0	3			
	{ Limber, ...		3	1	13			
	{ Ammunition,		1	0	8			
Ammunition Limber,	{ Body, &c. ..	30	3	3	14	6	0	2
Cart, 5 Pounder, light,	{ Ammunition,	60	2	0	16			
3 Pounder for moun-	{ Gun,		2	1	3	6	3	21
tain service, with 4	{ Carriage,....		2	3	12			
Boxes drawn by two	{ Ammunition,		1	2	24			
mules,		48						
1 Pair of Boxes for do.	{ Boxes,.....		0	2	10	2	2	26
carried on one mule,	{ Ammunition,	60	2	0	16			
1 Pair with 4 Boxes,	{ Gun,		2	2	0	6	3	14
drawn by two mules,	{ Carriage,....		2	3	2			
	{ Ammunition,	120	1	2	12			
1 Pair of Boxes for do.	{ Boxes,.....		0	1	22	1	3	22
carried by one mule,	{ Ammunition,	112	1	2	0			
24 Pounder Brass How-	{ Howitzer, ..		12	0	0	37	0	21
itzer,	{ Carriage,....		12	2	0			
	{ Limber,		6	1	3			
	{ Ammunition,	24	4	1	18			
	{ Body,							
Ammunition Limber	{ Limber, ...							
Carriage for 24 Pr.	{ Ammunition,	60	11	0	0			
Brass Howitzer,	{ Spare Wheel,							
	{ Howitzer, ..							
12 Pounder Brass How-	{ Carriage, ...							
itzer,	{ Limber,							
	{ Ammunition,	36	3	1	14			
	{ Body,							
Ammunition Limber	{ Limber,							
Carriage for 12	{ Ammunition,	92	8	2	14			
Pounder Brass How-	{ Spare Wheel,							
itzer,	{ Howitzer, ..		10	0	0			
	{ Carriage, ..		12	3	15			
5½ Inch Howitzer, hen-	{ Limber,		8	1	3			
vy,	{ Ammunition,	24						
	{ Body,		8	3	22			
Ammunition Limber	{ Limber,		8	1	3			
Carriage 5½ inch	{ Ammunition,	60						
Howitzer, heavy,	{ Spare Wheel,		2	13	0			
	{ Howitzer, ..		4	3	0			
	{ Carriage, ..		10	1	23			
5½ inch Howitzer, light,	{ Limber, ..		8	0	16			
	{ Ammunition,	24						

4 lbs. each round.

20½ „

NATURE OF CARRIAGE, &c.			Number of Rounds.	WEIGHTS.					
				Howitzer, Carriage, Limber, and Ammunition.			Total.		
				Cwt.	Qrs.	lbs.	Cwt.	Qrs.	lbs.
Spare Wheel Carriages.	Ammunition Limber	Body,	61	9	0	2	8	0	16
		Limber,		8	0	16			
	Carriage for 5½ Inch Howitzer, light,	Ammunition,		1	3	1			
		Spare Wheel,		2	2	0			
	4½ Inch Howitzer,	Howitzer, ..	16	5	1	2			
		Carriage, ..		3	1	16			
	Ammunition Limber	Limber, ..	32	3	3	20			
		Ammunition,		3	3	20			
	Cart, 4½ inch Howitzer	Body, &c. ..		2	2	0			
		Ammunition,		3	0	24			
	4½ Inch Howitzer for mountain service, with 4 Boxes drawn by two mules,	Howitzer, ..	24	2	1	20			
		Bed, &c. ..		2	1	20			
	1 pair of Boxes carried on one mule, 4½ Inch Howitzer,	Ammunition,	24	0	1	16			
		Boxes, ..		1	2	24			
	12 Pounder, medium,	Carriage, ..		13	1	21			
		Limber, ..		8	2	11			
	12 Pounder, light,	Spare articles,		9	0	17			
		Tools, &c. ..		12	0	16			
	9 Pounder,	Carriage, ..		7	3	11			
		Limbers, ..		9	0	24			
	6 Pounder, heavy,	Spare articles,		12	2	14			
		Tools, &c. ..		11	2	4			
	6 Pounder, light,	Carriage, ..		7	3	11			
		Limbers, ..		9	0	22			
	3 Pounder, heavy,	Spare articles,		11	2	4			
		Tools, &c. ..		7	3	11			
	5½ Inch Howitzer heavy,	Carriage, ..		9	0	15			
		Limbers, ..		7	3	11			
		Spare articles,		7	3	3			
		Tools, &c. ..		9	0	15			
		Carriage, ..		7	3	11			
		Limbers, ..		7	3	11			
	Spare articles,		8	3	24				
	Tools, &c. ..		8	3	24				

NATURE OF CARRIAGES, &c.		Number of Rounds.	WEIGHTS.					
			Waggons, Limbers, and Cart.			Total.		
			Cwts.	Qrs.	lbs.	Cwts.	Qrs.	lbs.
Forge Waggon with Lockers,	{ Body,		9	0	8			
	{ Limber,		7	3	11			
	{ Bellows, . . .		0	2	15			
	{ Anvil and bed iron,		1	2	18			
	{ Jobbing Smith's tools, Iron, Coals, &c.		2	0	5			
	{ Body,		4	3	9			
Store Limber Carriage,	{ Limber,		7	3	11			
	{ Spare wheels,		1	3	1			
	{ Store of sorts,							
Waggon (Flanders) for or Camp Equipage,	{ Ammunition }		15	2	0			
Baggage Cart,			8	3	22			
Ball Cartridge Cart,			7	3	4			

THE PRACTICE OF COURTS MARTIAL.



To the Editor of the Bengal Military Repository.

“ No officer should in common justice to a prisoner, or as regards common propriety in himself, sit on any court-martial, till he has in some form or other, at least, moderately acquainted himself with these subjects, and enabled himself to reason on them ”—*Military Law of England.*

SIR,

IN the following pages, I propose to offer for the consideration of your readers, a few remarks on Captain Hough's late publication, entitled “The Practice of Courts Martial.”

On the importance of the subject, I shall say but very little ; the slightest consideration will render it too apparent to require any illustration from me. When we reflect on the very extensive jurisdiction of General courts martial, and that to them is now transferred by the 4th Geo. IV. c. 81, (the Honorable Company's Mutiny Act,) the cognizance of all capital offences committed by Europeans at a certain distance from the Supreme Courts of each Presidency, it will not be denied that every officer should be acquainted with the leading principles of the law which he may at any time be called on, in conjunction with others, to administer,—with the general principles of the laws of evidence, by which is to be substantiated the guilt or innocence of the party under trial,—and more especially with the general rules by which the court of which he is a member are to be guided in the performance of their solemn duties. There prevails, however, on all that relates to the subject of a general court martial, (and indeed of courts martial in general,) a degree of ignorance, for which it is almost impossible to assign any sufficiently satisfactory reason ; and notwithstanding all that has been written on the subject, the mode of conducting the proceedings of a general court martial, or in other words, the practice of courts martial, appears to be as far from perfection as it ever was.

A great deal has been written on the principles of military law ; but it is only lately that any work has appeared expressly on the practice of our military tribunals. Without the advantages, therefore, of some settled and established mode of practice, it does not require much sagacity to discover, that courts martial have hitherto conducted their proceedings, not by any specific or defined rules, but by those which each Judge Advocate, or person temporarily acting as such, has prescribed to himself as a guide, and persuaded the court to adopt. In this opinion I am not singular. The Judge Advocate General of Bombay, with an experience of nearly twenty years to support his opinion, has expressed his surprise that courts martial should still have no other guide whatever for conducting their proceedings than the experience of the members, or the, perhaps, insufficient knowledge of the Judge Advocate* : and in another place he mentions, that the decisions of courts martial too often depend on the circumstances of each case, and not on any general and determined rule.

To such modes of procedure as these, may be ascribed the heterogeneous mass of conflicting decisions which perplex and dishearten the student of military law in the very commencement of his enquiries, and to these also may be attributed the innumerable discussions which occur at every general court martial, in many cases, no less inconsistent with that cool and calm deliberation which ought to prevail in every court of justice, than they are with the dignity and decorum of the court. By those whose lot it has been frequently to sit on general courts martial, I believe it will not be denied, that the time of the court is in too many instances more taken up with discussions on points of practice, than it is with the investigation of the charges on which they are to decide. Such, however, must and will be the case, until some established mode is laid down by authority, and adhered to by those whose more immediate province it is to conduct the proceedings of the court.

* Lieut. Col. Vans Kennedy's *Prac. Rem. on Proc. of Cts. Ml.* p. 7.

“ Have you exceptions to any of the members of this court, whose names I have now read over to you?”

Answer. ———

Question. “ Are you willing to be tried by this court?”

Answer. ———

And the entry on the record of the proceedings has been: “ The *President*, *members*, and Deputy Judge Advocate General, were then duly sworn.”

I will now advert to the reasons which have been urged, as affording sufficient grounds for this privilege on the part of the President. The first and most general one is, that “ he is named in the warrant.”

It should here be remembered, that all offences committed by military men, even if more of a private than a public nature, are punished as breaches of military discipline; and in the trial, therefore, of every military man, the court, as head of the army, is his prosecutor. I believe this doctrine will not be denied. It follows, therefore, that the Commander in Chief is interested, to a certain degree, in the result of every trial by a general court martial; and although it is not probable that a Commander in Chief can in general have any personal interest in the event, yet there may be instances, either of a political or some other nature, wherein he might be so biassed against the supposed offender, as to exert all the authority and influence of his situation against the prisoner on his trial. In what more effectual manner could he possibly injure him, than by appointing a man as the President of that court by which he is to be tried, whom he knows either to entertain the same degree of bias, or to have expressed himself in prejudiced terms, against him? It should be recollected also, that the President is not always appointed by the Commander in Chief, but sometimes by the general officer commanding a division who may have many other reasons for being biassed against a prisoner, and has the power of appointing a President, who is also, when the selection is left to him. Even in such cases as these, the baneful effects of this doctrine of exemption from challenge are too apparent. But when we consider, that courts martial are now enabled to try all capital of-

fences, and that the Commander in Chief can even in such a case, (if this exemption from challenge be legal,) permanently fix in the chair of the President any person (of course of sufficient rank) whom he chooses, merely by inserting his name in the warrant, the slightest reflection will justify the assertion, that such a power is dangerous in the highest degree, in the hands of any individual, however exalted in rank, however pure in principle, however remarkable for unblemished integrity and strict impartiality. It is a power which no man on earth ought to possess. There is another argument against this power on the part of the crown or its delegates, which does not appear to have engaged the attention of any writer on the subject. If the crown can, by inserting the President's name in the warrant, secure him in his seat, equally so can the crown insert the name of every member of the court, (as *was* done in the warrants for the trials of Lord Geo. Sackville,) and thereby equally secure them in their seats also*. If the President is exempt from challenge, because his name is in the warrant, equally so is every individual member, if his is there also; and the Judge Advocate, appointed also by the crown, would in such a case have to say to the prisoner: "All these members being named in the warrant, you have no right to object to any of them."

If this doctrine of exemption from challenge, on the ground assigned, be legal, I will ask, To what is military law, to what is a court martial reduced? If it be legal, I think the former may be justly termed a sanction and authority for oppression; and the latter, instead of being a court of justice, of honour and of equity, may at the pleasure of the crown be turned into a court of tyranny and injustice. The crown, wishing to bring forward a supposed offender, would, if this privilege were allowed, have nothing to do but to appoint its own President and members, and, inserting all their names in the warrant, thereby debar the prisoner from challenge, even with good cause assigned, and thus endeavour to secure to itself an

* Tytler, p. 141.

acceptable verdict. The strict and impartial administration of justice which secures both our persons and our properties, is the great end of civil society*. Rendering all homage to the well known integrity and impartiality of the members of the military profession, is it, I ask, possible that that trial can be impartial, the whole or any part of the prisoner's judges being appointed, and rendered exempt from challenge by his prosecutor? Suppose (for all possible cases must be taken into consideration) the prisoner to prove beyond the possibility of a reasonable doubt, that the President of the court, (appointed in the warrant,) not only bears personal enmity towards him, but had frequently expressed it to others, (then present, and ready to prove it on oath,) and that he had not only once, but more than once, expressed his intention of bringing him (the prisoner) to trial on the first opportunity,—and the Commander in Chief, on its being referred, does not acknowledge the validity of the objection: will any man in his senses gravely assert, that that is an impartial trial?

This doctrine of exemption from challenge, entirely precludes the exercise of that tenderness and humanity towards prisoners for which the English laws are justly famous. In capital cases, the prisoner is allowed an arbitrary and capricious species of challenge to a certain number of jurors, and this is grounded on two reasons. 1st. As every one must be sensible what sudden impressions and unaccountable prejudices we are apt to conceive, upon the bare looks and gestures of another; and how necessary it is, that a prisoner, (when put to defend his life,) should have a good opinion of his jury, the want of which might totally disconcert him; the law wills not that he should be tried by any one man against whom he has conceived a prejudice, even without being able to assign a reason for such dislike. 2d. Because, upon challenges for cause shewn, if the reason assigned prove insufficient to set aside the juror, perhaps the bare questioning his indifference may sometimes provoke a resent-

+ Blackstone's Commentaries, 379.

ment: to prevent all ill consequences, from which the prisoner is still at liberty, if he pleases, *peremptorily* to set him aside*. But as *peremptory* challenges cannot even in capital cases be allowed at a court martial, in the name of common humanity I ask, on what plea is it that we are deprived of the privilege of challenging the President of a court martial in common with the rest of the members? Is military law administered in mercy, or are its principles the principles of oppression? If this exemption be not the right of the President, the former is my answer; but if it be, I hesitate not to assert the latter as my reply. I shall conclude this part of the argument by observing, that the consequence of allowing such a doctrine as this will be, that in direct opposition to the laws of England, which will not that a prisoner shall be tried by one *whose countenance* he shall dislike, by military law he may be compelled to submit to be tried (even for his life, in all cases for his reputation) by a court, at the head of which is a man who not only bears personal enmity to him, inflamed by the circumstance of having been objected to, but who has expressed his desire of bringing him if possible to condign punishment.

The second reason which has been urged by some for this privilege on the part of a President, "is the inconvenience that might arise from his being liable to be challenged."

It is with considerable reluctance that I can bring myself to believe, that any person seriously arguing on this subject, could advance a sentiment so subversive of the first principles of justice, and utterly inconsistent with the common dictates of humanity.

Indeed I consider this reason, when advanced as affording sufficient grounds for permitting this exemption from challenge, as absolutely absurd and puerile; and it is the first time that I ever heard of convenience or inconvenience, (no matter to whom or what,) being consulted, when a man's life is in jeopardy, or his character

* 4 Black. Comm. 353.

and reputation are at stake. If what I have before advanced against the legality of this assumed privilege carry with it conviction to any man's mind, any further remarks on this second reason must be superfluous. If, on the contrary, it has not convinced the reader, I confess I have but one more argument in support of my opinion.

The privilege here assumed as the right of the President, has never been recognized by His Majesty, or by any Commander in Chief, either in England or in India. Should I be mistaken in this assertion, I am not wilfully so, and can easily be set right :—but believing that I am correct, I shall only express my firm conviction, that the President of a general court martial is legally liable to challenge, on cause being assigned, in common with the rest of the members, and that the court can legally allow or disallow the validity of the same. The court, when allowing it, should adjourn until a new President be appointed.

Page 943, note 81, Captain Hough's work.—Among other legitimate causes of challenge, it is mentioned as one, "*that the member had been a member of a previous court of enquiry, held to investigate the case.*" The author goes no further, and I therefore understand his opinion to be, "*that the bare fact of having been a member of a court of enquiry, is ipso facto sufficient to prevent that member's sitting on the trial of the offence itself by a general court martial.*" Should such be Captain Hough's opinion, (and I assume it to be so, as he does not make one dissenting remark on it,) I differ from him *in toto*, and assert, without fear of contradiction from any military lawyer, that unless the previous court of enquiry gave an opinion, (which they do not, unless ordered expressly so to do,) a member who sat on it, may legally sit as a member of the general court martial. It would be a waste of time to quote the precise words of the several authors whom I shall adduce in support of my opinion: suffice it to say, they all ground their arguments on this subject on the following clause of the 25th Ed. III. c. 3. "A man who has acted as a grand juror on the finding

of a bill of indictment, may be objected to, if returned to serve on the petit jury*." Mr. Adye quotes the express words of the statute, and adds: "Members of a court of enquiry, may therefore by this statute be challenged and excepted against as members of a court martial, *if they have given an opinion, as they are sometimes directed to do†.*" Mr. Sullivan says the same: "*Their prior presentation (i. e. their opinion) being to be considered of the nature of an indictment‡.*" Mr. Tytler also coincides in this view of the case¶. Colonel Williamson, in his military arrangement, goes much farther; but I shall only add, that Colonel Vans Kennedy is likewise of the same opinion, expressed in these words: "The having been a member of a court of enquiry on the same subject which had given an opinion; *but if the court had not given an opinion, the member cannot be objected to§.*" With these authorities before him, I am at a loss to imagine on what grounds Captain Hough has taken so limited a view of this cause of challenge. If he coincided in the view of the authors above quoted, he should have given the whole substance of their opinion: if he disagreed, his reasons for differing therefrom should have been stated, before he lays down in a practical work of this nature a ground of challenge, without mentioning the reason which alone can make it valid; namely, "the having given an opinion on the merits of the case about to be tried||."

In the same note (No. 81, page 943,) it is mentioned as a legitimate cause of challenge, "*that he (the member) had been heard to express a previous opinion as to the prisoner's guilt.*" But as in the last case, the circumstances

* 1 Chitty's Criminal Law, 542.

† Adye, 168.

‡ Sullivan, 20.

¶ Tytler, 224.

§ Practice of Courts Martial, p. 16.

|| I could here mention an instance of a Judge Advocate requesting that a member of a general court martial might be relieved, as he had sat on the court of enquiry assembled to investigate the conduct of the prisoner then about to be tried. To the best of my recollection, the court of enquiry gave no opinion. This trial occurred in 1814.

which alone will render the expression of such an opinion a valid ground of challenge, are not mentioned.

I am aware that by many it is supposed, that a person having given any opinion at all before a trial, is incompetent to sit as a member of the court; and this view of the subject has been adopted by some late writers on military law. An attentive consideration of the authorities cited by them will shew, that the inference they have drawn is erroneous. Mr. Adye and Mr. Sullivan both quote from works of indisputable authority, that "it had been adjudged a good cause of challenge, that a juror hath declared his opinion beforehand, that the party is guilty, or will be hanged, or the like; but the prisoner shall not examine a juror concerning such matter upon a *voirdire* (*veritatem dicere*), i. e. oblige him to answer upon oath to such questions as the court shall demand of him, because it sounds in reproach; and it hath been adjudged, that if it shall appear that the juror made such declaration from his knowledge of the cause, and not out of any ill will to the party, it is no cause of challenge*." The opinion of a juror, either as to his wishes as to the result of the trial, or as to the innocence or guilt of the prisoner, must have been expressed with a malicious intention, or he will not be set aside†.

I think, therefore, that in these two causes of challenge, as laid down by Captain Hough, many persons will be misled by a reference to his Practice of Courts Martial, as the reasons which render them valid are not even hinted at.

Page 944, No. 6.—I perfectly agree with the author in his opinion, that "*the member or members challenged must not withdraw.*" The court have not the power of dispensing with his or their attendance during their consultation; but I cannot subscribe to his idea, "that delicacy will induce the court not to require their opinion, *which indeed ought not to be given.*" On the contrary, I

* Adye, 170. Sullivan, 22. 3 Black. Comm. 363. and the numerous authors mentioned by them.

† 1 Chitty Criminal Law, 542.

say, that it ought to be given. Let the member challenged give his opinion in favour of the challenge, rather than give no opinion at all. But I think, that on this, as well as on all other disputed questions, the court do not (according to the present system of conducting courts martial) possess the power of dispensing with the vote of any member of their body, no more than they can with the vote of a member on the finding and sentence*. I confess I do not see the propriety of a member's convenience or delicacy being consulted, when engaged in the administration of justice.

Page 948, note 98.—I cannot pass by this note, without asking to whom Captain Hough wishes to give the power or right of “*insisting* on the witnesses being ordered to retire?”

I am well aware that it is the practice of courts martial to order all witnesses (except the one under examination) to retire; and in many cases, the precaution is just and proper. In some, however, such as trials for murder, &c. it would be advisable, and in fact it is a custom of almost daily occurrence, for other medical men to hear the evidence of the surgeon who first saw the body of the deceased, in order that their opinions may be asked as to their concurrence, in the conclusions he has drawn of the manner by which the deceased came by his death. “Before the examination commences, the crown may demand that the witnesses should retire, in order to each being questioned in the absence of the others; and the same order will be made on the request of the defendant, but as a matter of indulgence, and not of right†. Mr. Tytler’s opinion‡, therefore, is erroneous. I think the Judge Advocate, as counsel for the crown, may demand it, and that the prisoner cannot: the court of course may order it.

Page 949, No. 23.—It is here laid down, and I believe correctly, that a question objected to by either party, and allowed by the court to be a good objection, is not

* G. O. H. G. 28th November 1806.

† 1 Chitty’s C. L. 618. See the authorities quoted by him,

‡ 248.

to be recorded, "nor can the party insist upon it." If this be received and established practice, I conceive it to be liable to many objections. The record of the proceedings of a general court martial should be a faithful record of all that occurs at that court; but an *ex parte* statement is not a faithful, because it is not a complete, statement of all that did occur. Some questions are omitted; the approving authority does not know that they were ever before the court, and therefore is not acquainted, as he ought to be, with all that was submitted for their consideration. There is an instance of disapproval by high authority "of the extraordinary manner in which the cross-examination appears to have been conducted: the evidences for the prosecution were cross-examined with the most scrupulous rigour, while the cross-examination of those for the defence was altogether neglected*". Whose duty was it to cross-examine (properly so speaking) the evidences for the defence? The Judge Advocate's. Unless all questions (whether put to a witness or not) are recorded, how is the approving authority to form an opinion of the manner in which its counsel or Judge Advocate has attempted to perform his duty to the state, and the service in general, or a prisoner has endeavoured to prove his innocence? When a hardened villain escapes the punishment his offences so justly merit, unless the questions of a Judge Advocate (though not put to the witness) are recorded, by what means is a Commander in Chief to judge, whether the failure of the prosecution is to be attributed to the negligence of the Judge Advocate, or the erroneous decisions of the court? Are there not many points, which the approving authority would like to see clearly established by evidence before confirming a sentence, perhaps affecting a fellow-creature's life? The questions objected to may have been put with the view to prove those very points, and clear up all doubt upon them. In the wisdom of the court, they have not been thought necessary; have been rejected; and according to the present practice, have not been re-

* G. O. C. C. 13th September 1810.

corded: will not the Judge Advocate, whose special care it was to conduct the prosecution, and whose experience pointed out to him the necessity of proof to those points, stand convicted in the judgment of the Commander in Chief, either as negligent of the trust reposed in him, or grossly ignorant of the duties of his situation, without the opportunity of explanation ?

Again: may there not be questions which the prisoner may wish to put to a witness, which (if recorded on the proceedings, though not allowed to be asked) would prove to a Commander in Chief the prisoner's anxiety to afford every information on the subject, fearless of the answers which such questions might have elicited ? And may not a Commander in Chief, like other individuals, be inclined to think, that a prisoner, conscious of his innocence, would have put such and such questions, but dared not do so ? The questions rejected by the court may have been those which have suggested themselves to the approving authority, as (almost) sure indications of the prisoner's own conception of his innocence. In consequence of their non-appearance on the proceedings, will not the prisoner's conduct appear in a less favourable point of view than if they had been on the record ?

As I never yet heard any reason assigned for this practice of not recording the questions objected to, I now ask, what harm can possibly arise from their appearance on the proceedings ? It will not render them much more bulky than they generally are, even on the trial of the plainest case ; but this disadvantage is not, in my opinion, to be compared with the benefit which would accrue to all the parties concerned by their being recorded, as the approving authority would thereby be better enabled to form a decided opinion on the whole merits of the case.

While on this topic, I take the opportunity of remarking on what appears to me, the present unfair method of deciding on the relevancy of a disputed question, or on the admissibility of the evidence offered.

On the part of the prosecution, the Judge Advocate puts a question, which to the prisoner (who is probably

just as well acquainted with the laws of evidence as the Judge Advocate himself) appears irregular, and which is therefore objected to: as no discussion is permitted in open court, it is immediately closed; and the Judge Advocate (perhaps not very well pleased at the prisoner's presumption in doubting his opinion, and stopping him in the midst of his examination,) of course tells the court, that the question is perfectly regular, and persuades them to adopt his opinion: the court is opened, and the prisoner is informed, that the question is perfectly regular, and is therefore to be put to the witness. After such a decision, it would be considered presumption indeed in the prisoner to differ from the opinion of the court, nor dare he even to tell them so, or in any manner to discuss the propriety of such decision, in any subsequent stage of the trial*. Is this fair? Is it equitable? Is the decision of the court in such a case as this founded on an impartial hearing of the arguments of both parties on the relevancy or otherwise of the question objected to, or the evidence offered? or is it grounded on the *dictum* of one of the parties only, and that party on the prosecutor's side? The same course is pursued when the prisoner is examining his witnesses: the Judge Advocate objects to some question, and the court is closed *instantly*; he urges to the court his reason for thinking the question to be irregular; and most likely they will coincide with him, as they hear no arguments against his view of the subject: the court is opened, and without stating any grounds for the conclusion they have come to, the court inform the prisoner, that the Judge Advocate's objection to his question (or perhaps the entire mode of examination) is allowed to be good. Were the prisoner to be informed of the nature of the arguments which the Judge Advocate has been using in the closed court, five minutes reply by the prisoner might in some cases prove their fallacy; and thus give the court the opportunity of thanking the prisoner for setting them and the Judge Advocate right, and

* Vide page 949, No. 23, Hough's Practice.

- of reversing the decision they had just formed, and which now, after the prisoner's arguments, would perhaps appear to them absurd; but no such opportunities are given to a prisoner, and I need not remind any military lawyer of General Whitelocke's remarks on this subject. In his defence he complained, and with justice, that when he did (however rarely) object to a question, he went out of court, with the opinions of several members in favour of his objection; but that, when the court was opened, he went in with "the misfortune of finding the court unanimous against him*;" as Captain Hough says, (page 949,) it is evident the General thought the Judge Advocate General had persuaded the court to agree to the question; I should imagine that every person would think so too. In conclusion, I cannot help thinking that this system of deciding disputed questions is unfair; and that it tends to fetter a prisoner in the examination of his witnesses, in a manner totally at variance with the humane principles of English law, and irreconcilable with the impartial administration of justice.

I now pass on to page 952, No. 39. — "*Prisoner put on his defence.*"

By the first paragraph of this number, I conclude Capt. Hough to mean, (though he does not in express terms say so,) that a prisoner must make his election to address the court, before or after the examination of his witnesses; but that he cannot be heard twice†. There is a great difference of opinion on this point, the consideration of which is embarrassed rather than facilitated by any reference to what has been stated by writers on military law. Mr. Adye says nothing of the mode in which a defence is to be conducted; but from the manner in which he expresses himself, appears to think, that a prisoner should first examine his witnesses, and then address himself to the court‡. Mr. Sullivan does not particularize it either, but apparently thinks the prisoner should adopt a different course entirely; making his defence first, and then exa-

* Printed Trial, vol. ii. p. 686.

† Adye, p. 202.

‡ Vide p. 933 of his work.

mining his witnesses*. The "Military Law of England" is altogether silent on this point. Colonel Vans Kennedy does not give any decisive opinion on it, but tells his readers, that the practice of courts martial is not settled; and Mr. Tytler differs from them all. "When the evidence," he says†, "in support of the charges is closed, the prisoner sometimes judges it proper to submit to the court, either verbally or in writing, a general statement of those defences which he means to support by evidence." And in the next page he adds: "When the whole evidence on both sides is closed, the prisoner may, if he thinks proper, demand leave of the court to sum up, either verbally or in a written statement, the general matter of his defence, and to bring into one view the import of the proof of the charges, with such observations as he conceives are fitted to weaken its force; and the result of the evidence in defence, aided by every argument that is capable of giving it weight."

Such is the theory of the subject: if we consider the practice, it will be found to be no less unsettled.

Lord George Sackville, in 1760, addressed the court first, and then called his witnesses. General Whitelocke adopted a similar course in 1808. In 1809, Lieutenant Colonel Doveton addressed the court, examined his witnesses, and summed up his evidence, as recommended by Mr. Tytler. Lieutenant Colonel Bell and Major Storey both addressed the court but once. (It is here worthy of remark, that the defence of the former officer was read by his counsel, Mr. Marsh, the barrister, by whom I believe it was written.) Lieutenant Colonel Johnston, in 1811, addressed the court, both before and after the examination of his witnesses. His second address appears certainly to have been by permission of the court‡; but the latest military trial in my possession is that of Sir J. Murray, who adopted the same course, without any permission§. His trial, it should be remembered, was conducted by the

* Sullivan, p. 100.

† Tytler, p. 252.

‡ Vide printed Trial, p. 133 and 381.

§ Vide printed Trial, p. 196 and 474.

Judge Advocate, who asserted that the President could not be challenged; and if his opinions are entitled to the weight which some persons give them, I claim the benefit (if it be any) of his concurrence with me in this point.

On the whole, therefore, I am inclined to adopt Mr. Tytler's opinion, that a prisoner may demand leave to address the court, both before and after the examination of his witnesses. Before, for the purpose of informing the court by what species of evidence he hopes to prove his innocence;—and after, for the purpose of contrasting the evidence of his own witnesses with the proof adduced on the part of the prosecution, and of drawing such inferences as he can, from any contradictory testimony which may have been given during the course of the trial.

Page 955, No. 50.—“*Summing up of the evidence by the Judge Advocate General or prosecutor.*”

Lest I should possibly be misunderstood, I shall here explain, that I understand Captain Hough to mean, “that whether the Judge Advocate alone is conducting the trial, or there is besides him a private prosecutor, the summing up of the evidence may be made by either.” I should be glad to find that I am mistaken in this view of the passage, and I think that Captain Hough's own remarks will be found to confirm me in the opinion I entertain, that in this stage of the trial, the private prosecutor (if there be one) has no right to be heard. When he has made (I shall not stop to enquire whether he must have permission to do so) his reply to the arguments advanced by the prisoner, his share in the trial is at an end; and the Judge Advocate, dropping his capacity of counsel for the crown, then sums up the evidence adduced by both parties, pointing out such parts thereof as in his opinion substantiate the charges against the prisoner, at the same time faithfully and impartially recapitulating all the circumstances in the prisoner's favour; disencumbering the proceedings of all extraneous matter, and exhibiting the whole of the proof *pro* and *con*, in as clear and distinct a view as he possibly can, for the final consideration and decision of the court.

In performing this part of his duty, he divests himself entirely of his situation of counsel for the crown, in order that he may now act without any bias or partiality. "When the evidence and speeches on both sides are thus concluded, it becomes the duty of the Judge or presiding magistrate to sum up the evidence to the jury*." To adapt this to the case of a court martial: the Judge Advocate is the one party; the prisoner is the other: when their speeches and evidence are both concluded, nothing remains but for the court to consider of their finding and sentence; but to assist them in forming a correct view of the whole case, the Judge Advocate, divesting himself of his situation of an advocate, performs the part of a presiding magistrate. Now most assuredly this cannot be done by a private prosecutor, and I therefore think, that the words "or prosecutor," at the heading of this number, ought to be omitted, as likely to mislead those referring to this work, and not intimately acquainted with the subject of which it treats. The court are not bound to adopt the view of the case, as stated by the Judge Advocate: they alone are the judges of the law and the fact; but I cannot agree in the sentiment expressed in note 121, "That in the summing up of the evidence, no opinion should be given." As a lawyer, the Judge Advocate, to whom the court have the right to look for and require legal advice, must I conceive submit his opinion, whether the charge or charges contain any degree of criminality; for I cannot imagine any thing more ridiculous and absurd, than the pronouncing a man guilty, and in the same breath expressing a conviction that there is no criminality in what he has done. Special verdicts, or those which find certain acts charged to be proved, leaving higher authority to apply the law to those facts, are not known in military law: such a verdict from the members of a court martial, in whom the character of judge and juror are united, would, Mr. Adye says†, be highly absurd. It may therefore be considered as a rule, that when there is no criminality in the charge,

* 1 Chitty's Crim. Law, p. 631.

† 1 Adye, p. 83.

(although the facts alleged be proved,) or there is no sufficient evidence to prove the charge, (although it does involve a great deal of criminality,) the prisoner is entitled to a full and unqualified acquittal, without any mention of the insufficiency of evidence, or the absence of criminality*. I further conceive, that the Judge Advocate should in his summing up, express his opinion, whether the evidence adduced is in a legal point of view sufficient to prove those charges; nor can his so doing be construed into any judgment on the substantial merits of the case: for instance, if the charge be for murder, I consider it to be the bounden and imperative duty of the law officer of the court, to submit to them his opinion, whether under all the circumstances of the case, the evidence on record, to which alone they are to look, will warrant the court in returning a verdict of guilty of murder or of manslaughter, or of not guilty altogether, as is the usual practice in England, when the homicide does not amount to either murder or manslaughter†. The shades of guilt necessary to be proved before a court can return a verdict, in a case of homicide, are so various, and the distinctions of the law of England so nice on this subject, that the utmost caution should be adopted before any verdict is returned at all. It will not, I think, be denied that the number of military men, or in fact of any class of individuals, whose studies and pursuits have been directed to a minute investigation of the common and statute law of England, is comparatively very small. If this be true, it follows that there are few members of a court martial who would feel satisfied with the conviction of their own minds, in a case of life and death, if such conviction were unaided by the advice of an experienced lawyer. Unless the Judge Advocate, therefore, express his opinion on the sufficiency of the evidence, in what way are the court to derive any benefit from the extent of his professional studies, or the experience which practice has taught him? The same remarks will

* G. O. C. C. 21st Nov. 1820. † 4 Black. Comm. p. 198. 15th edition.

apply to the trial of a person charged with the commission of a rape. The degree of proof which must be adduced before a verdict can be given against the prisoner, is known only to those who have made the rules of evidence their particular study: and deliberation most assuredly is necessary in the trial of these and other capital felonies.

I shall conclude by saying, that in my opinion, the Judge Advocate ought to express his opinion on the legality, relevancy, and sufficiency of the proof adduced. His own good sense, respect for the court, and a consciousness of the importance of his own situation, will in general teach him the bounds beyond which he ought not to intrude himself on the notice of those who alone are entrusted with the decision of the case.

Page 957, No. 53.—I conclude Captain Hough to mean, “that the votes as to punishment are taken upon the whole question, and not separately upon each article*.”

But we shall see that this is not the doctrine that has been laid down to the army by high authority. In 1805, an officer was tried on three original charges, and two additional ones, one of which was for breaking his arrest; for which offence, when proved, as any person who has read the Articles of War knows, a specific penalty is assigned, without any discretionary power on the part of the court. He was found guilty of part of ~~the~~ original charges, and the finding and sentence finish thus: “Of the second additional charge, viz. for breaking his arrest, the court finds the prisoner guilty, which being a breach of the 19th art. 12th sect. of the Articles of War, the court does therefore sentence the prisoner to be cashiered.” Among other observations will be found the following: “And his Lordship conceives it was the duty of the court, having found ——— guilty of the first part of the first charge, and the first part of the second charge, to have awarded punishment according to the nature of the offences of which the prisoner was found guilty on those charges†.”

* Vide No. 35, and note 38, p. 935.

† G. O. C. C. June 1805

Not to mention at length intermediate instances of this order being adhered to*, I shall only adduce one which occurred some years after. In Nov. 1811, a Jemadar being tried on two was found guilty of the first charge, and sentenced to be suspended for four months from the Company's service. He was then convicted of the second charge, and sentenced to be dismissed from the service. In the event of the latter sentence being confirmed, I confess my ignorance of the manner in which the former could be carried into effect; and if it could not, I am at a loss to imagine why such a sentence was given. In the following year, however†, the practice was altered in the case of a native officer, who being convicted of three charges, had the penalty of dismissal separately awarded for each offence. In the remarks on the sentence, it was declared, that "the separate annexation of the penalty to each specific count is superfluous and informal:" and I believe it has not been done since. In His Majesty's army, however, the same practice was occasionally adopted. •

I shall now make a few remarks on the sentence; and I need scarcely observe, that this is the most important part of the trial, since if the sentence be not legal, the labours of the court are almost fruitless. There is so remarkable a difference of opinion on the mode of sentencing a defendant (supposing him to be an officer) to even the slightest degree of punishment that can be awarded, that I cannot pass over it without observation. By the latest decision, courts martial are desired only to sentence a prisoner to be reprimanded "in such manner as may be directed by the Commander in Chief‡." With that deference which is due, and not only which is due, but which I always pay, to superior authority, I venture here to remark, that this mode of awarding a reprimand will not be found to be in conformity with the established practice of the British army, nor indeed with the positive order of His late Majesty: and the following instances may be adduced in support of this assertion.

* G. O. May 1808, and June 1811.

† G. O. 17th August 1825.

‡ G. O. 31st March 1812.

Vide James's Collection of Charges, &c. Page 38. 1798.

Sentence.—"To be reprimanded by the President of this court martial in the presence of the officers of the said regiment, as soon as they can be assembled, for his great want of knowledge of his duty in disobeying the verbal and written orders of his commanding officer, and for entering into houses and places appropriated for quarter-masters, non-commissioned officers, and private solders to drink in, and remaining there unnecessarily."—Approved by His Majesty.

2. Page 41. 1799.—Adjudged that the prisoner "shall for his irregular and improper conduct be reprimanded in the public orders of the army, in such manner as Field Marshal H. R. H. the Duke of York, Commander in Chief of His Majesty's forces, shall be pleased to direct."—Approved.

3. Page 72. 1800.—The court martial adjudge the prisoner "to be publicly reprimanded by the Commander in Chief in the island of Jersey."—Approved.

4. Page 125. 1802.—The court adjudge that the prisoner "be publicly reprimanded by the officer commanding the 3d Regiment Foot Guards."—Approved.

5. Page 118. 1802.—The court adjudge that he "shall be publicly reprimanded by the commanding officer of the 45th Regiment, in presence of the officers of the said corps."—Approved.

6. Page 218. 1806.—The prisoner in this case was sentenced "to be publicly reprimanded in general orders."—Approved.

7. Page 241. 1806.—The court "sentence the prisoner to be publicly reprimanded by the President of this court, when and where His Majesty may be most graciously pleased to appoint."

His Majesty was pleased to confirm the sentence of the court martial; observing, however, that it was not for His Majesty to direct the time and place of inflicting punishment.

8. Page 297. 1809.—"Upon which charges the court found the prisoner guilty, and adjudged him to be most

publicly and most severely reprimanded in General Orders by the insertion of this sentence in the said orders, at such time as "His Majesty may be graciously pleased to direct the same to be carried into effect."

"His Majesty has been pleased to confirm the sentence of the court, and to direct that the same may be carried into effect."

9. Page 330. 1810.—The sentence (in part) was "to be privately admonished by the Commanding Officer of the Forces." Approved by the Commanding Officer of the Forces and by His Majesty.

10. G. O. H. G. 27th April 1812.—The sentence in part was "to be publicly and severely reprimanded in the general orders of the army." Approved by the king.

11. G. O. C. C. May 1814.—To be privately reprimanded by the commanding officer of H. M.'s 2d Batt. 56th Regiment. Approved by Lord Moira.

The author of "The Military Law of England," quoting the sentiments of a former writer, says: "The mode in which a public reprimand is to be given, is specified by the court martial: the most solemn and exemplary is at the head of the regiment, line, or garrison; another is by the President before the court by which the delinquent has been found guilty; a third is in the public orders: these are of course public reprimands*." Sir C. Morgan, in his notes on Tytler, says: "It is necessary that the court should expressly state the nature and degree of punishment they intend to adjudge." It is evident, therefore, that these writers were of opinion, that a court martial not only had a right, but that it was their imperative duty to award a reprimand to be conveyed to the prisoner, in any way they thought adapted "to the nature and degree of his offence†."

It is to be remembered, however, that the latest decision published by authority is the one by which we are to be guided; and when a reprimand is the sentence of the court, it can only be awarded to be given "in such

* Military Law of England, 160.

† Vans Kennedy's Prac. Rem. 134.

manner as the Commander in Chief may be pleased to direct."

Page 958, No. 56.—"*Recomendation of the prisoner by the court.*"

It is worthy of remark, that the subject of a recommendation is not even alluded to in Mr. Adye's Treatise, or Mr. Sullivan's Thoughts on Martial Law, or in the "Military Law of England:" nor has any later writer discussed the following points:—

1st. "Whether the opinion of the majority of the court on the question of recommendation is binding on the minority?" or in other words, "whether the recommendation agreed to by the majority is to be thence considered as the act of the entire court, or only as the act of such majority?"

2dly. Whether the members recommending (supposing them to form a minority) have a right to forward their recommendation?

I believe it hath usually been considered, that the recommendation is the act only of those recommending; and Captain Hough appears to adopt this opinion: he says, "Such of the members as see fit, recommend the prisoner to mercy, and sign their names immediately under the sentence." I cannot assent to such an opinion as this, for the following reasons.

In the first place, I consider the 5th article of 14th section of the Articles of War (for the Honourable Company's service) to be applicable to the collecting of the votes on this, as on every other disputed question: "and in giving their votes, are to begin with the youngest."

2dly. I next consider, that the act of the majority of the court, in the decision of every disputed question, thence immediately becomes the act of the whole court; and should I be correct in this opinion, I would ask, why in this stage of the proceedings, that mode of deciding disputed questions which has been adopted throughout the proceedings, is now to be laid aside, and on this one point, the votes of the majority are to have no weight? In disputed questions on the admissibility of evidence, and in fact in every other (except this one) point, the

practice of courts martial hath ever been, to acknowledge the votes of a majority as binding on the rest of the court; and for this reason, the word "majority" is not (or ought not ever to be) inserted in the framing of their resolutions on any point. Indeed I consider, that it would be as irregular to record that "The majority of the court agree to admit the evidence offered," as it would be to say, "The majority of the court find the prisoner guilty," and I venture to say no such sentence was ever penned. If so, why would it not be equally irregular to record, "The majority (or part) of the court recommend the prisoner to mercy," as would virtually be done, by the signatures of those only appearing with whom the recommendation originated?

In the third place, I am of opinion, that that part of the oath which every member takes, and which binds every member and the Judge Advocate not to divulge the vote or opinion of any particular member, is as binding on every one of them in this instance, as it undoubtedly is on every other question on which different opinions may be given; and I therefore as decidedly think, that it would be a wilful and direct violation of that oath, to give only the names of those recommending, as it would be to give only those of the members who convict the prisoner. The oath of secrecy administered to every member of a general court martial, is said to be founded on reasons of the wisest policy; not only for the purpose of securing the members from being exposed to the resentment of the parties concerned, and of their connections; but likewise for the purpose of preventing the members from being liable to the displeasure or otherwise of the crown or its delegates, in consequence of the opinions they may have expressed, or the votes which they may have given. Is not the oath of secrecy violated by the publication of the names of the members recommending, supposing that all do not do so? And is not the expediency of the first precaution above mentioned entirely set at nought, by the appearance of the signatures only of those recommending? And are not those members who do not recommend, *thereby* subjected to that very re-

sentment from which the wisdom of parliament hath endeavoured to shield them ?

Again: are there not many instance on record of a Commander in Chief perusing with surprise and displeasure the recommendation which has been forwarded to him*? If the names of those who recommended, had alone been attached thereto, is not the intention of the act of parliament entirely defeated by their being divulged, and are not those members at the mercy of the crown for their improper abuse of the power of recommendation ?

I shall not now make any remarks on the question, whether the recommendation is to be written in the proceedings, or in a separate letter : I shall only add, that in my opinion, the act of a majority of a court martial in the consideration of the question, whether there shall be a recommendation or not, is binding on the minority ; and that the votes on this question are to be taken as in every other case, that of the junior member first, and so on. Should the question be carried in the negative, then I conceive that no recommendation can be sent at all : if in the affirmative (by a majority), that it is to be considered as the act of the entire court, and the President's signature is quite sufficient.

Page 958, No. 58.—“ *The proceedings can only be revised once.*”

Here is an irregularity in the mode of expressing himself, which the author of a practical work like this, should carefully avoid. It is the sentence only, and not the proceedings of a court, that can be revised, and the distinction might therefore have been made.

While on this part of the subject, I would ask, “ where is the authority for the revision of the proceeding of a native court martial, general or regimental ?” I do not remember ever to have seen it mentioned in any work on the subject of courts martial.

With the opportunities of research which Captain Hough has enjoyed, I cannot but regret that he has not

* Vide G. O. C. C. March 1808, June 1809, Nov. 1812, April 1814. James's Collection of Charges, &c. p. 673, and a very recent instance.

been more fortunate in his selection of the trials which have taken place, both in his Majesty's and the Honourable Company's armies, for breaches of the different articles of war,* and occasionally rendered both important and interesting, by the remarks which the proceedings have drawn from high authority on disputed or intricate points.

For instance:—Among the trials for wilful murder, might have been introduced that of Gunner Kenyon of the Madras artillery, who was tried at Nagpore in December 1818, in which case the Marquis of Hastings was of opinion, that a court martial could not acquit a prisoner of wilful murder, and find him guilty of the lesser crime, manslaughter:—"As manslaughter is a distinction peculiar to the common law of England, it is a modification of the crime which a military tribunal would not be competent to pronounce; but the court would be confined to laying its sense of the extenuatory circumstances before the Commander in Chief*."

Again: There is an important case mentioned in Captain Hough's former work (his *Case Book*), which is omitted in his "*Practice of Courts Martial*;" I allude to the trial for desertion in 1813, of a sepoy, who in addition to corporal punishment was sentenced to be marked with the letter D with needles and ink; &c. That such a sentence, when passed on a native, was illegal *in toto*, I believe no one (excepting perhaps the Judge Advocate who conducted the trial) will deny. If it were illegal, the case should have been omitted in the "*Case Book*," as liable to lead other courts martial into the same error. If, however, I am mistaken in my opinion of its illegality, the case might with advantage have been inserted in the "*Practice of Courts Martial*," to shew our military tribunals the powers they possess. The instance above mentioned is the only one, I believe, that ever occurred in the native part of the army.

I have not opened Captain Hough's *Practice of Courts Martial* with the unworthy intention of merely finding

* G. O. C. C. 25th January 1819. But see Adye, 209; Sullivan, 75; Tytler, 321; Phillips' *Law of Evidence*, i. 204; 1 Chitty's *Criminal Law*, 638.

fault; very far from it: I consider him to be entitled to the best thanks of every individual of the army, for the attention he has paid to a subject so interesting and important to them all, and involving the best interest of the service to which they have the honour to belong; but, in the illustration of a subject which has received so little careful and accurate examination, and which is consequently so little understood, errors were not only excusable, but almost to be expected. The foregoing remarks have therefore been penned in the earnest (but I fear it will prove to be a fruitless) hope, that in the next edition of Captain Hough's work, those parts of the practice of courts martial which I have attempted to prove in some cases to be illegal, and in others narrow and illiberal, may be altered: for we should bear in mind, "that one precedent creates another; that they soon accumulate, and constitute law; and that what yesterday was fact, to-day is doctrine."

I wish not to be understood as at all desirous of introducing, even were I able, into the practice of our military tribunals, those intricacies and technicalities which have been acknowledged by many (and those not the least able to judge) as disgraceful to the statute book and the law of England, and which are therefore utterly inconsistent with military law, the peculiarity of which, we are desired to remember, "consists in the simplicity of its form, and its proceedings being comprehensible to the least informed." But it is the want of some decided method of practice which has deprived military law of all its simplicity, and rendered the practice of courts martial so intricate and unsettled.

Without admitting the technicalities and the intricacies of the law, (or as Mr. Sullivan calls it, that "wily labyrinth,") to what better source can we look, than the practice of our courts at home, when it can be applied to courts martial?

I have now, Sir, in conclusion, to apologize to you for the length of the foregoing remarks. At a future period, I may perhaps solicit the attention of your readers to a few more on the same subject. I leave those contained in

the foregoing pages, to the consideration of such among your numerous readers as may be inclined to bestow on them an unprejudiced and dispassionate perusal; and I shall esteem myself fortunate, if on account of any merit they may possess, they should elicit any observations in reply.

I remain,

Sir,

20th Feb. 1827.

Your obedient Servant,
A BENGAL SUBALTERN.

It was with pleasure we received, and have published the above letter, so creditable to a Bengal Subaltern.

The excellent sense and temper, the sound judgment and information possessed by our correspondent, leads us most earnestly to wish he may not fail to gratify our readers, with "more on the same subject."

The points touched upon in his present letter, are of great importance, and of the highest interest to the army; and though we believe him to be correct in all his opinions, we shall not the less readily insert any observations sent us in reply.

It may with truth be asserted, that there is no branch of our military establishment, to and in which an officer rises so entirely by his talents and acquirements, as that under our Judge Advocate General. Since the jurisdiction of our general courts martial in India were extended by act of parliament (4th George IV.), the difficulty of finding from among the ranks of our armies, officers possessed of the qualifications requisite in that line, has necessarily increased in the ratio of the various offences, civil as well as military, now placed under their cognizance. But the cause which has occasioned the demand, will no doubt produce the supply, and we hope will bring forward not only one, but many "a Bengal Subaltern."

The study of the criminal law, civil as well as military, becomes now a part of every Indian officer's duty; and though heretofore much neglected, will, for the future, be probably attended to more generally.—*Ed.*

ARTICLE III.

EXCLUSION OF HIS MAJESTY'S OFFICERS FROM
THE STAFF OF THE INDIAN ARMY.

To the Editor of the British India Military Repository.

SIR,

In your number for January last, I find a letter from an old Captain and Contributor, on the subject of the exclusion of His Majesty's officers from the India staff, written in answer to a pamphlet published in England, by a King's officer, on the same subject; which as one of His Majesty's service in India, I cannot allow to pass unnoticed.

Had the old Captain been satisfied with exposing the erroneous statements of the King's officer, without publishing equally erroneous ones of his own, the public might have been left to judge for themselves, from the facts adduced; but never was the warning in Scripture more completely disregarded, that, before you take out the mote that is in your brother's eye, to see clearly, you should take out the beam that is in your own.

I will pass over the first thirteen paragraphs of the article of your old contributor, as they relate to the pamphlet of the King's officer, which I have not seen, and has little to do with my present purpose. What I propose in this letter, is, to enable the same persons who have read the article in your January number, to see the other side of the question, and not let them suppose, that because your old Captain has found out errors in his opponent's calculations, that there are none in his own.

Though the British India Military Repository is, very properly, a staunch supporter of the Company's army, I hope its Editor will not forget, that its appellation is British; and exclude from his pages a letter, which has for its object a fair discussion of the claim of His Majesty's

officers, to participate in the advantages which the Company's exclusively possess.

In the fourteenth paragraph, the old Captain has taunted his opponent with the time his pamphlet issued from the press; and has selected it as the period for making out a table, exhibiting from public documents, the staff appointments held by the two services. Now I will ask any impartial man, who is acquainted with the facts as they really bear on the subject of his discussion, whether the old Contributor has not taken advantage of every circumstance in the table, and the note which is attached to it, likely to give an unfair representation of the question at issue.

His taunt as to the time, happens to be the period in which the list of King's officers holding staff situations was larger, perhaps, than ever was known in India; and so far perhaps he would have been justified in taking advantage of it, had he not concealed from the public, that out of 94 staff appointments, stated as being held by King's officers, 35 were only temporary ones, 25 open to both services, and 11, though held by King's officers, yet contrary to the orders of the Court of Directors*.

Before entering further into the subject, it will be necessary here to observe, that it is not to the exclusive system adopted by the local Governments that the King's officers can object. On the contrary, judging from the appointments that are open to both services, His Majesty's would be most happy to leave the selection to them. We should then enter the field on equal ground; but it is the illiberal, and exclusive regulations of the Court of Directors, that inspire a feeling of indignation in the King's officers; and it is owing to my opponent having kept this view of the subject out of sight†, and having

* Our old contributor may not have stated all this, but did he know it? If he quoted temporary along with permanent appointments held by His Majesty's officers, did he not include others of the same nature held by the Honourable Company's officers? We feel assured he never purposely concealed any fact. Might he not, however, question the perfect accuracy of some of our present correspondent's statements? Our new contributor should draw a line, and fairly distinguish between our old contributor's acts of omission and commission.—ED.

† Here again, our new correspondent appears to believe that our old contributor purposely omitted a fair view of the subject in discussion. But we

in one paragraph actually declared, that the local Governments have the exclusive patronage of appointments, and have opened many of them to King's officers, that induce me to take up my pen on the subject*.

I shall proceed in detail to mention another erroneous view which the table above alluded to gives of the question. Instead of calculating the number of officers of the two services in India, and stating the proportions there are of each on the staff†, the old contributor has given the number of regiments, after having shewn, that there are twice the number of officers in the King's, to the Company's regiments: he might as well have said, that one Company's officer was equal to two King's, or what would have been just as absurd, that one Company's native regiment was equal to one King's‡.

question whether our new correspondent himself be correct. For when he imputes illiberality to the framers of the regulations to which he refers, he seems to forget, that these regulations, though issued *through* the Court of Directors, must have been previously approved, and formally sanctioned by His Majesty's ministers, and that they may have originated solely with the Board of Control, or been suggested entirely by authorities in His Majesty's service; it being understood, that the efficiency of His Majesty's regiments in India, in regard to the number of officers present with each, is a point very much attended to at the Horse Guards; nay, that these orders, in as far as half pay officers are concerned, are called for by act of Parliament.—Vide Section 134, Chapter 52. 33d of George III.—Ed.

* If, as our new contributor states, 11 King's officers held situations in India, "contrary to the orders of the Court of Directors," they could have held them only by the indulgence of the local Governments; and it would by his admission therefore seem, that these eleven appointments at least, had been not only originally opened to King's officers by the local Governments, or other authorities in the Company's service, possessed of their exclusive patronage, but kept open for them, "contrary to the orders of the Court."—Ed.

† Our old contributor seems to have exactly done this.—Vide page 103, No. X. of our Repository.

‡ The fact of there being twice the number of European officers in one King's, to what there are in one Company's native regiment, is quite undeniable. But our new contributor's deduction, that one Company's officer is therefore equal to two King's, seems a *non-sequitur*, and certainly cannot be said. Yet it is not therefore absurd to say, that one Company's native regiment is equal to one King's, in *numerical strength of men*. The moral, or even the physical strength, not being here the question. It is numerical strength. It is the number of corps and fractional parts of an army, that occasions its extent of staff. We do not exactly comprehend the scope of this part of our new correspondent's letter. Our old contributor's argument seemed to be, that the numerical strength of men in his Majesty's regiments, and in those of the East India Company's service being the same, while the proportion of officers in the latter was only *one half* that in the former, it would be unfair, after refusing to raise the latter to the former strength, after denying, or not giving the Company's officers that advantage, to take the total number of officers in each service (which had already given the officers in his Majesty's regiments a numerical strength, and therefore a chance of command, *double* that of the Honorable Company's regiments) as a rule

The difference in the number of officers in each regiment, is owing to the internal regulations of the two services; and the events of the late war will sufficiently point out, as in fact a letter in your January number, by an Indian Officer, has done, that it is to the small proportion of officers present with their corps that the failures at Ramoo, &c. were to be attributed*. This therefore is in

for deciding the proportion each service should give for the army staff. Because, as the total number of army staff depends entirely upon the numerical strength of the Honorable Company's forces, (for if the Company had no forces, there would be no staff but for King's troops,) so the supply of officers for situations arising solely out of the number of corps composing the Company's army, should be in proportion to the number of those corps, and not in proportion to their very limited number of officers, compared against His Majesty's extensive complement. If the number of officers had formed the rule for proportioning the staff of armies, would not the French army, in the retreat from Moscow, have found itself burthened with a very enormous and superfluous "*Etat Major*?" So long as the cause which produces a measure is adverted to as a guide to govern its details, so long, in our judgment, must our old contributor be right, and our new contributor wholly wrong.—Ed.

* *The following General Order was lately issued in Bengal.*

General Orders by the Right Honourable the Vice President in Council, Fort William, 17th August, 1827. No. 163 of 1827.—The Honourable the Court of Directors having determined that not more than five officers shall be simultaneously absent on staff employment from any one corps, whether cavalry or infantry, the Right Honourable the Vice President in Council, with the concurrence of the Governor General, is pleased, at the earnest recommendation of the Commander in Chief, to establish on this head, a further restriction as to the grades from which the five individuals are to be taken.

The efficiency of the army in all its branches, being of the last consequence, it is deemed highly expedient towards the attainment of so important an object, that a proper number of experienced officers should be present with every regular regiment, to contribute their aid in sustaining its discipline, and in diffusing that confidence amongst the native officers and men, which conduces so essentially to the wellbeing of an army constituted as is that of Bengal. To secure, therefore, as far as the means at disposal will admit, the services with every corps of a portion of competent officers, the number of regimental captains that may be absent at one time from the same corps of the line, on staff, or other permanent public employment, is restricted to two.

The measure here indicated, as calculated to conduce to the greater efficiency of the army, is designed to be wholly prospective, and by no means to affect present incumbents of the grade of captain, unless in such cases of emergency as His Excellency the Commander in Chief may feel constrained to bring to the special notice of Government.

To obviate all occasion for references, and for decisions on particular cases hereafter, the Vice President in Council is pleased to announce as a rule for future guidance, that when two captains are absent from a corps in public situations, and a subaltern of the same corps holding also a detached staff situation, comes to be promoted to the rank of regimental captain, the officer so promoted shall be the individual to vacate his appointment, under the operation of these orders.

Government having, also, taken into consideration the practicability of rendering the regular army, upon the whole, more efficient in point of European officers, and being of opinion that, with the exception, for a season, of the local battalion serving in Assam, it is quite unnecessary that to any local or irre-

favour of employing King's officers more extensively on the staff, in order that the Company's regiments may not be rendered inefficient, by so large a portion being detached on staff duties*.

The reasonings in paragraph 22, 23, 24, 25, 26, are all grounded on this absurd principle, of the number of regiments in the two services; with an occasional regret, that the Honourable Court do not give their own corps the same number of officers as His Majesty's. Quere, Would the Company's service accept this boon, on the same terms that His Britannic Majesty's and all other services accept it,—that whenever the authorities may think fit, in time of peace, to reduce their establishment, a portion of each rank should be put on half pay†?

police corps should be attached more than a Commandant, an Adjutant, and where such appointment has been sanctioned, a second in command; all officers in excess to those above enumerated, who are now doing duty with any irregular corps or local battalion, are remanded forthwith to their regiments.

Still further to promote the desirable end herein contemplated, of giving to the army every advantage which can accrue from an accession to the number of European officers available for regimental duty, His Lordship in Council, with the concurrence of the Governor General, has determined that, whenever an escort with a reside at a foreign court, or with a political agent, is furnished from the troops of the line, the services of a distinct officer permanently appointed to the command of such escort, are unnecessary. In all such cases, therefore, the appointment of Commandant of the escort is to be abolished on the receipt of these orders, and the officers who have been officiating in that capacity, or who may be doing duty with escorts so circumstanced, are to join their respective regiments, should no political charge operate in bar to their so doing.

* It may be a reason for issuing such an order as that we have quoted, recalling as many Company's officers to their corps as can be spared. But we see no *claim* for employment that this measure can give to His Majesty's officers that they did not already possess. The discipline of European regiments in India would, we think, in time of peace at least, be more injured by an abstraction of officers, than that of native corps. And instances are not wanting, where officers taken away from His Majesty's regiments by the local authorities in India, have been remanded to them from the Horse Guards.

Blackwood's Magazine for May 1827, remarks, that "King's officers ought to bear in mind, that whilst they are birds of passage, the Company's officers are fixtures, and that the general good of the service requires, that many staff appointments should be filled by men who are likely to fill them permanently. Besides, there are fifty chances to one that the Company's officers, accustomed to hold intercourse all their lives with natives, are better qualified than *they* can be, to discharge most duties of the kind. These reasons alone appear to us perfectly conclusive, why a preference, and a very decided preference, should be shown to Company's officers." We believe the Honourable Court's orders alluded to by our new correspondent go chiefly, if not entirely, to prevent His Majesty's officers becoming fixtures, by retaining situations in India, after retiring on half pay: an indulgence which, we may observe, is not allowed in the case of their own retired officers, by the Court of Directors.—*En.*

† Our new contributor ought to prove a principle absurd, before he can fairly assume it to be so; and must shew, that the establishment of officers in

The next subject I come to, is the regimental staff of the two services, which I shall not enter into, as it is quite irrelevant to my present purpose, and the arguments all founded on the unjust principle, of the number of regiments, and not of officers*.

The supercession of the Company's officers by the King's, is a subject upon which the old Captain dwells much, and therefore I will advert to it, though it has nothing to do with the question before us. Would he, I should like to know, be solicitous to purchase the promotion which he now gets for nothing†; or if he happened to wish for such additional means of getting on in

the Company's service, is, like that of "*His Britannic Majesty's*," always increased in time of war, before he proposes to reduce it in time of peace. Previous to placing the Company's corps on the same terms with "*all other services*" in time of peace, let him obtain for them the advantages of "*all other services*" in time of war. Our new contributor seems wholly to forget, that the Company's service, *unlike* "*all other services*," has no war establishment of officers; and that although constantly increased in numerical strength in time of war, its corps *never* on such account obtain any, the smallest addition of European officers, while every regiment of His Majesty's service, when ordered to India, *even in time of peace*, along with its increase of men, invariably obtains an increase of officers; the one *always* following the other in the King's, but *never* in the Company's service. All King's regiments in India are therefore kept on a war establishment of men and officers,—all those of the Honourable Company on a war establishment of men, but on a *peace* establishment of officers. It is to this that our old contributor alludes, when he says, that the King's regiments have a complement of officers double that of the Company's native corps. The duties of all corps in India, King's or Company's, European or Native, are, in regard to officers, duties of foreign service; and there is no corps, Native or European, whose establishment must not be ready for those emergent and sudden calls incident to the peculiar and extraordinary nature of our Indian possessions. The difference between the regimental establishment of officers for His Majesty's and the Honourable Company's service is, that while the former is on a war establishment, performing foreign duty, the latter is on a *peace* establishment, not only performing similar duties, but officers of inferior rank, and on inferior pay, performing the duties executed by superior ranks, on superior pay, in His Majesty's corps. Thus there are ten companies in each regiment of foot, in *both* services. In His Majesty's corps, every company has its captain; but in each of the Company's native corps, there are only five captains to ten companies. Thus five of the senior lieutenants in each Company's regiment, do the duty of captains in command of companies, but only get subaltern's pay, and subaltern's allowances.—Ed.

* If the regimental staff were given solely to benefit the *officers* of corps, this would be quite correct. But as they, on the contrary, are given chiefly for the duties connected with the clothing, payment, and discipline of the *men*, rather than for that of the *officers*, our new contributor seems wholly incorrect in assuming, that the number of regimental staff should be regulated by the number of officers. It is easy to say a principle is unjust, or absurd, but we think our new contributor would find it difficult to prove that his assumptions, in regard to regimental or other staff, being given always and only in proportion to the number of *officers*, has any ground to rest upon.—Ed.

† Do services then go for nothing? In His Majesty's corps, we believe one year's foreign service in India counts for much more than one at home.—Ed.

the service, (which his pecuniary circumstances might make agreeable to him,) does he think it would be considered as a boon by the majority of the service? The fact is, the benefits of such a change would be chiefly confined to those who are already fortune's favourites, the perquisites of staff appointments would enable those who held them to supersede their poorer brethren, and the whole service in this case, as in that of increasing their numbers, must take the bitter and sweet together*.

In paragraph 27, I find the old contributor maintaining the justice of excluding His Majesty's service from native corps, from what he calls strictly civil situations, and some others that I do not understand. His reasons for the exclusion are given in the subsequent paragraphs, which appear to me to make more against, than for his arguments.

The local Governments, he assures us, possess "the exclusive patronage of these situations," and "have opened many of them to King's officers." Does the old contributor require to be told, that the local Governments are not now allowed, nor were they at the time his letter was published, to appoint King's officers to the situations alluded to; that formerly they were permitted to do so, and repeatedly availed themselves of it with advantage to the Indian service, is rather a proof, that it should be continued; or was there no power to controul the authority and orders of the Directors†, it might be a question, though

* If our new contributor will refer to Captain Walter Badenach's late work on the Indian Army, he will find one mode suggested, of alleviating supercession between the two services, and preventing it in corps. The officers in the Company's service might, like those of His Majesty's, find raising money more easy in India than in Europe, to purchase themselves on; and whatever objections might be offered to the introduction into the Company's service, of the principle of the purchase of regimental commissions, as it exists in His Majesty's service, (a system which occasions irregular supercession, and grants advantages to the rich and wealthy,) we feel assured, that every Company's officer would hail with joy, the abrogation of those orders which at present prevent any junior, or number of juniors, subscribing to purchase the resignation or retirement of a senior. The officers in the Company's service would most gladly avail themselves of this means of accelerating their progress up the ladder of regimental advancement by means which would effect that object, without disturbing the rule of strict seniority rise in each regiment, and which, we suppose, has only to be asked for respectfully, to be granted.—Ed.

† We question whether the local Governments in India were ever permitted, without the sanction of the Court of Directors, to employ officers not belong-

a doubtful one, as I shall presently show, whether it would be just to confine to a particular service the permanent advantages, when there was another equally encountering the dangers and hardships, and in time of war, being placed the foremost in the fight, and the first to mount the breach, excluded by the regulations from enjoying the greater part of them*.

The allusion again in paragraph 29, to the paucity of officers in their regular service, and none in their irregular, is answered by my former arguments. If they are increased, they must become liable to be placed on half pay; and it is evidently to avoid this disheartening alternative that the Court of Directors have been obliged to be so cautious in adding to their army†.

ing to His Majesty's regiments in India, in any situations in this country; and we believe, that where officers of His Majesty's corps in India have been employed away from their corps, they have been more frequently remanded to them, by authorities in His Majesty's service, than by the Honourable the Court of Directors. Our new contributor's attention is requested to the following note of our old contributor, by which it would appear, that it was not by the Court of Directors' orders *alone*, that officers belonging to His Majesty's regiments in India were withdrawn from the services of native states.—

"I have been given to understand, that during the year 1821, the Marquess of Hastings, then Governor General and Commander in Chief, having, in consequence of a deficiency of *Company's* officers, borrowed several from His Majesty's regiments in India, to assist in disciplining the troops of the native powers in alliance with the British Government; His Royal Highness the Duke of York, apparently alarmed at a measure, which to His Royal Highness appeared likely to affect the discipline of His Majesty's Indian regiments, immediately directed those officers to be restored to their corps; and applied to the Court of Directors, proposing to grant officers from His Majesty's half pay list, for the service of the native states. This the Court would not allow, it being in direct opposition to their established policy, to permit European officers, independent of the East India Company, to remain attached to the courts or armies of native potentates."

* We do not think our new contributor has strengthened his case by this allusion to the distinguished post, allotted, on all occasions, whether of assault by storm, or of action in the open battle field, to His Majesty's regiments. No Company's officer can deny the fact, though many must regret that they are now so generally denied the prominent post of honour, enjoyed by His Majesty's regiments, both as such, and as senior corps, and Britons; and the more so, in consequence of the great reduction now made in the number of the European regiments formerly in the Company's service*. But instances are not wanting, of native regiments in the Company's service, taking precedence of European corps in the field, and before the breach; and although none, we trust, will see such scenes again, the remembrance of the past should not be wholly forgotten.

† Here our new contributor appears to speak with a little too much confidence. The list of officers, both on *full* and half pay, retired from the Company's service, though large, has never disheartened the Court of Directors from adding to their army. We believe a feeling exists in Leadenhall Street, far more

* In 1772, the Company's European forces consisted of 11,408 men.
In 1882, 8,000 men.

In paragraph 30, it is stated, that King's officers are still employed politically, and in command of local corps; and four are mentioned. The first, he must be aware, is only of a temporary nature. The second was appointed in consequence of there being a deficiency of officers in that particular line at the presidency in which it occurred. The third has been removed because he was a King's officer; and the fourth is a case, which has no more to do with the argument than if the officer alluded to had belonged to the half pay list of the king of the Sandwich Islands*. In fact had he been a servant of that king, his claim to retain his situation would have been greater than it is at present; for the Honourable Court have not thought it necessary to exclude any but His Britannic Majesty's officers from the lucrative appointments alluded to. It was Colonel Gardner's distinguished services to the state, and his peculiar merits, that induced the Government to overlook the invidious regulations of the

liberal than our new contributor is willing to grant the Honourable Court credit for. And we hope to live long enough to see the regimental establishment of officers now granted to the Honourable Company's corps, not only further increased, more especially in the rank of *colonel* and lieutenant colonel, so as to place the seniority regiments of their service, more on a par with *those of the same nature* in the King's, but this increase effected without the alternative of half pay being had recourse to, either in regard to any portion of them, or of His Majesty's officers in India; because we suppose, if that measure were ever again adopted, towards a service in which it has for nearly half a century remained unknown, (our correspondent may not be aware, that there are many officers, now lieutenant colonels only in the Company's service in Bengal, who were reduced to half pay, and became supernumerary in the year 1785,) it would not remain dormant towards the other service, in which it is so common.—Ed.

* It certainly, in our opinion, has very much to do with the subject of commands, and situations of a military nature in India, being held by King's officers; for a commission from the king of the Sandwich Islands would have been recognized by the authorities in India, only as waste paper, while a commission from the king of England, must not only be recognized, if the officer be on *full* pay, but even in the instance of an officer retired on *half* pay from His Majesty's service, (Major Gardner,) as quoted by our old contributor seems to have been deemed of such paramount effect and force, as to have given him command, when employed by the Honourable Company, over officers far his seniors in the Company's service. The mere act of employing a king's *half* pay officer in the Company's military service, thus giving active energy to his long dormant commission from his Majesty.

We might here ask, Would a distinguished Indo-Briton, now commanding a corps of local horse in Bengal, who so long remained in the Company's service without any commission, have accepted a commission from the king of the Sandwich Islands, so readily as from the crown of England? The first would to him have been of no value; while the other has lately enabled him to receive honour from his Sovereign, from which he would otherwise have been debarred.—Ed.

Court, and forgive him for having been, some 20 years ago, a full pay officer of His Britannic Majesty's service.

In commenting upon the 31st paragraph of the old Captain's letter, I will again bring his own reasoning against him. After alluding to the propriety of the above exclusion, he adds: "True, they (meaning the King's officers) must generally, though not always, be excluded from the Honourable Company's service, to which it may be doubted if they have more claim, than when in the Peninsula of Europe, to that of their Majesties of Portugal, of Spain, or of the Netherlands." Now I should have hardly thought, that an old contributor to a monthly publication, would have brought forward a circumstance to prove his arguments, which makes so directly against it. Had he not himself adduced it, I should have quoted the very same circumstance, to justify the claims of the King's officers to command native corps, that he has thought proper to bring as an example against it*. How many living witnesses are there now in India of the admission of British officers, not only into the Spanish and Portuguese regiments, but on their staff? And what is more, I appeal to those officers, whether after the war was concluded, there were not above one hundred of them retained in their service for years, and only sent away when the country was revolutionized†.

* No *half* pay officer of the British army, temporarily employed in the service of the Kings of Portugal, Spain, or of the Netherlands, in that of the Nizam of Hyderabad, the Raja of Nagpoor, or other sovereigns in alliance with Britain, takes rank in such service, with reference to, and in virtue of the commission granted to him from the crown of England; while, if employed in the Company's service, his commissions from the king of England are not only decisive, but the sole criterion of his rank. Although, therefore, the former states could employ British *half* pay officers, without feeling any inconvenience from commissions, and dates of rank, previously granted to them by the king of England, it is not so with the East India Company, who cannot employ them without positively superseding their own officers.—Ed.

† Yes! But these officers were retained only as convenient to those governments, or as matter of general or individual favour; and however important their services, they never thought of putting forth a "*claim*," as a *matter of right*, to remain in such places against the will of those governments. It is only against this claim, put forth, and demanded as matter of right, of equity, and of justice, in opposition to, and in the very teeth of the orders of the Court of Directors, and His Majesty's ministry, that our old contributor contends. If Marshal Beresford had no *right* to remain in command of the Portuguese forces against the will of the Portuguese government, where is the *right* of His Majesty's officers to remain employed in the Company's service against the will of the chief controulling power vested with the supervision of their affairs? The

I now come to what the old Captain calls the comparative statement of the staff situations held by the two services. I will likewise make a comparative statement, somewhat similar to it; but instead of giving a list of all the staff appointments held by the two services, I will distinguish those to which the Company's officers are alone eligible, and those to which the King's are exclusively entitled: the few remaining ones, which consist mostly of personal staff, I shall consider as neutral; and if they are filled by a larger proportion of King's officers than their numbers in India would justify, I can only say, it must be owing to their merits, or the feeling that they are unjustly excluded from a proper share of the general staff: these personal appointments are not under the controul of the Court of Directors, or of the Government collectively*; the patronage is confined to individuals, and is quite of a private nature. I have, therefore, a right to exclude them from my comparative statement of the public staff appointments held by the two services*.

Not having access to Madras and Bombay army lists, and the staffs of those Presidencies, I must leave out many appointments held by the Company's officers, which will prevent my making the proportion correct: notwithstanding these disadvantages, I shall still be able to prove, that His Majesty's officers got a very unfair portion of the Indian staff appointments.

employment of either must surely depend upon the pleasure, or convenience of the supreme power of each state respectively.—Ed.

* We believe our new contributor at fault here. Have not the appointments he alludes to, salaries attached? and are not these appointments made, and their salaries fixed and paid by the Honourable Company's Government? Nay, do not these appointments arise out of others in the Honourable Company's service? and are not these, and almost all of a very high and important nature in the Company's military service, open to Company's officers, although generally filled by officers from His Majesty's army, who naturally enough choose their personal staff rather from their own army than from that of the Company? We do not think, that "a feeling that they are unjustly excluded from a proper share of the general staff, or the superior merits of King's officers," has ever occasioned any one in his Majesty's army being preferred to one in the Company's service. We hope to see officers in the Company's service, not only occasionally raised to the situations of Governors at Madras, Bombay, and to that of Governor General in Bengal, but to those of Commanders in Chief, as formerly, at our several presidencies. In such case, their personal staff might be chosen as much from the service of the Company as from His Majesty's corps.—Ed.

One word more I must add, about the department of public works. The old contributor has excluded it from his comparison, because the line are not now eligible to it by the orders of the Court of Directors. How ingeniously he brings in the orders of the Court, to serve his own purpose; yet when they make against him, he is silent. It so happens, that the Court's orders on this subject are not decisive: qualified engineers are to be appointed when they are to be had: in the last two appointments in that department, qualified engineers were not to be found; at least we must suppose so, for two officers of the line were appointed to the vacancies; therefore, it is clear the department is open to them; and as I find 27, exclusive of engineers, in the Bengal army list, in the department of public works, I shall include them in my statement.

I must take the old Captain's list of Brigadiers and Commandants, from the same want of reference; and though they are not, strictly speaking, exclusive appointments, I shall give my opponent the benefit of including them in my list.

List of Officers in His Majesty's and the Honorable Company's Services in India, holding Staff Appointments which exclusively belong to their respective Services.

	King's.	Comp's.
Commanders in Chief,	3	0
Lieutenant Generals, commanding garrisons, ...	0	2
Major Generals on the Staff of the Army, ...	6	7
Officers of inferior rank, including Brigadiers commanding divisions, Commandants, &c. ...	11	41
Adjutant Generals,	1	3
Deputy,	2	3
Assistant Adjutant Generals,	0	10
Deputy Assistant ditto,	0	15
Brigade Majors,	3	30
Town Majors,	0	4
Fort Adjutant,	0	19
Quarter Master Generals,	1	3
Deputy ditto,	1	3
Ditto Assistant ditto,	0	19
Army Commissariat,	0	79
Audit and Pay Department,	0	45
Judge Advocate General's Department, ...	1	21
Surveyor General's ditto,	0	20
Stud Department,	0	12

Carried over, 29 356

			Brought over, 29	356
Clothing Department, ...	...	...	0	7
Military Board Staff, ...	...	...	0	8
Superintendents of Cadets, ...	...	...	0	3
Commandants of Depôts, ...	...	...	3	0
Adjutants of ditto, ...	...	...	3	0
Pay Masters of ditto, ...	...	...	3	0
Departments of Public Works, ...	...	...	0	27
Superintendents of Roads, ..	...	...	0	7
Ditto of Telegraphs, ...	...	...	0	2
Political, Civil, and Miscellaneous, see Bengal army list 1827, 0			0	62
Superintendents of Canals, Bridges, ...	...	...	0	4
				<hr/>
				38 456

Which just makes the proportion of Company's officers holding exclusive staff appointments to King's, 12 to 1

* Whereas the numbers of the two services are only as 4 to 1

To give therefore King's officers a fair distribution,

there ought to be on general Staff, ... 109 388

After the old Captain's list of the staff appointments held by the two services, I find the following remarks on the impropriety of King's officers being appointed to even some of the situations which he has admitted into his list, which need only be quoted to prove their absurdity. He says : " Many of the appointments in the Company's service here noticed, it must be evident, could not be generally conferred by the local Governments on His Majesty's officers, who by exchange or purchase in England, might at any time suddenly effect their removal from the country, *contrary* to the wishes of the local Governments employing them†." He next says, that generally speaking, a king's officer would be out of his place at the heads of several of the India appointments. Granted; he would, as the case stands at present; but if he had served 10 or 15 years in the junior branches, I suppose

* But the number of Company's *corps*, in India, compared with those of His Majesty's service, being at least ... 12 to 1 therefore, according to a fair distribution of the staff among the *corps* of each service, it seems only right to give, as above, exactly 38 to 456.—Ed.

† Where is the absurdity? The case supposed seems quite *possible*. Sir George Barlow, or Lord W. Bentinck, for instance, when Governors of Madras, could not have retained within that presidency a king's officer, who had by purchase or exchange, obtained his removal from any of His Majesty's regiments within that presidency; such officer having due authority from General McDoual or Sir John Craddock, as Commanders in Chief, to return to England. The Commander in Chief's orders would, in this case of a *king's* officer, have been paramount to those of the local Government.—Ed.

he would be as qualified as a Company's officer*. His arguments in this respect apply as much to the Company's as to the king's. No Company's officer is eligible for the staff, till he has been four years in the country. I should be sorry to exempt king's officers from the same period of service in India, to qualify for the staff. In fact, let the point rest with the Government, with certain restrictions, applicable to both services; but do not let the Court of Directors, by their regulations, establish such an arbitrary exclusion as at present exists†.

As to the last sentence in the paragraph on which I have been commenting, the arguments of the old Contributor are hardly worth a reply, that "Company's officers" whose commissions do not extend beyond India should be "eligible for the staff in Europe," it would be best answered by the following questions. Does the king of England want the services of the Company's officers in Europe‡? Can the Company do without the king's army in India§?

* This is not impossible. But as His Majesty's officers are not from necessity in the habit of daily intercourse with the native soldiery, it is not therefore probable.—Ed.

† Can our correspondent shew that the rule is arbitrary? Our old Contributor has satisfied us that it is founded on circumstances peculiar to both services.—Ed.

‡ We believe Company's officers, and Company's troops, have both before now been employed, because required for the service of the king of England, in Egypt, at the Cape of Good Hope, Java, Isle of France, &c. &c. and if not ever employed in Europe, yet our native troops have been on the shores of the Mediterranean.—Ed.

§ We might in return ask our new contributor, Do the Company want to employ King's officers? Can they not do without them? As the Company, before the commencement of the present century, had but little assistance from King's troops, (one regiment only of His Majesty's troops being in Bengal in 1796,) as the country was obtained, so we think it may be retained, chiefly, if not wholly, by the Company's forces. We do not see why the East India Company might not very well do with a very great reduction in the present number of His Majesty's regiments, provided they reorganized European regiments of their own; for no European regiments formed from the same material can be very different from each other, merely because one belongs to the King and the other to the Company. On the subject of European regiments, we think, with Blackwood, in his No. for May last:—

"Though we cannot go the lengths which many men who have served in India are accustomed to go, by speaking of the Sepoy troops as if they were equal, or nearly equal, in any one respect, to British soldiers, it is a truth self-apparent, that, as the Indian empire was obtained chiefly through the instrumentality of the natives themselves, so must it be preserved chiefly by native agency. The distance of the scene from our own shores, as well as the countless superiority in point of numbers, which, in case of any serious disagreement

With these two questions I shall close my letter.

I am,

Sir,

Your most obedient Servant,

A NEW CONTRIBUTOR.

* * In expressing our readiness to publish whatever may be sent to us on either side of this interesting and highly important question, provided the tone and style of such communications be of a nature admitting of our so doing, we conclude our notes on our New Contributor's letter with the following extracts from Auber's Analysis and the Quarterly Review.

"A king's regiment is at all times liable to removal from one presidency to another, and from Asia to Europe or America; the opportunities or inducements which both the officers and men attached to such regiments have of acquiring the language, or studying the habits, customs and prejudices of the native, are few, whilst the Company's officers and soldiers, on the contrary, aware that all their hope of fortune and preferment centre in India, necessarily apply themselves to the attainment of that knowledge upon which their comfort and future prospects depend. The Company's European regiments are in a great measure the nursery for European non-commissioned officers; and it is contended, that the spirit and discipline of the native regiments have been most materially promoted by their union with the Company's European troops."—*Aub. Anal.* p. 449.

"We have an army of 300,000 men in India, 280,000 of which are mostly native troops belonging to the East India Company, and commanded by British officers; the remaining 20,000 are king's troops; that is to say, the former are to the latter *as more than twelve to one*: yet the advantages of the former are every way inferior to those of the latter, in rank, in pay, in their retirement. This degradation of so great a majority cannot fail to create a feeling of dissatisfaction, and the conscious-

between the Hindus and their European masters, the former could at all times bring into the field, alike render this statement incontrovertible. He must be wonderfully imbued with national vanity, who can suppose, for one moment, that the whole disposable force of Great Britain, could it be transported to India, would suffice to keep in subjection a population of upwards of one hundred millions, scattered over an extent of country little inferior to the whole of Europe, and aided by an army of more than three hundred thousand men, armed and disciplined after the same fashion with itself; and if this be the case, how much more ineffectual would be the efforts of some twenty thousand men, the total amount of King's troops now in India, either to resist a serious attack from without, or to repress a general mutiny within? It is to the native army, therefore, to the Hindus and Musselmén enrolled under the British standard, and to the Englishmen who command them, that we must mainly look for the preservation of our power; for without this cordial co-operation, all other efforts to maintain our present ascendancy in the East would be utterly fruitless."—*Ed.*

ness of a grievance, which must one day break forth into remonstrance and insubordination, unless checked by a nearer assimilation of the native forces with those of his Majesty."—*Quarterly Review*, June, 1827, p. 137.

The Honourable Company's army, in 1825-6, amounted, we be-

lieve, to Europeans,	9,850
Natives,	2,46,497

Total soldiers in the Company's service,	2,56,347
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Native Establishments,	45,937
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Total persons in the Company's service, not including E. of-

ficers,	3,02,284
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European officers in the Company's service,	3,951
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Grand total of men and officers in the Company's service,	...	3,06,235
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The king's army in India amounted to,—Europeans,	...	15,519
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Native Establishments,	3,522
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Total persons in the king's service in India, not including E.

officers,	19,041
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European officers in the king's service,	689
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Grand total of men and officers in the king's service in India,	19,730
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In the H. C.'s service, there was therefore only 1 officer to every 64 soldiers, or only 1 officer to every 76 soldiers and estabts.

In the king's service, ... 1 officer to every 22 soldiers, or—1 officer to every 27 soldiers and estabts.

In other words, the king's troops had a complement of three officers, where the Company's troops had only one. The proportion which the Company's force in India bore to His Majesty's, would from the above statement, seem to be rather 15 or 16, than 12 to 1, at least in the year 1825-26.

ARTICLE IV.

OBSERVATIONS ON THE CONDITION OF SEPOYS,

Absent from their Corps, through Sickness, on Furlough, &c.



“Happy is that city, which in the time of peace thinketh of war,” was the motto over the armoury of Venice; and in the spirit of that wise maxim, no season can, I apprehend, be fitter than the present, for pointing out the defects of our military establishments, or departments connected with them, and suggesting improvements.

I have, during a service of many years, Mr. Editor, of course heard frequent discussions regarding the efficiency of our native army, and may “*en passant*” observe, that the inclination to disparage this branch, bore in general an inverse ratio to the speaker’s knowledge of the language, characters, and habits of the sepoys, and of their previous history as a component part of the British army; but whatever difference of opinion may exist regarding their qualifications as soldiers, no one can have had much intercourse with them, in the relative situation of patient and medical attendant, without being, like me, an admirer of their behaviour during sickness; nor do I envy that man his feeling, who, with such means of observation, does not become interested in their fate, and desirous to promote their welfare.

It is with a deep and anxious feeling of this sort, that I presume to request admission for the following observations, on different points to which my attention has been more immediately called in the course of my official duty, which I now submit without further preface.

1st. The aversion of sepoys to be left in a station or field hospital when their regiment is ordered to march, is well known, as is also the inadequacy of the ten doolees allowed to a regiment for the purpose required. Should Government object to any extra expence on this account, I

think the object might be attained (that of transporting all but bad cases with the regimental hospital) by reducing the number of dooleys one half, and substituting an equal number of hackeries, which, without increasing the expenditure, would more than quadruple the means of transport.

It was, I believe, part of Lord Hastings' plans to attach spring waggons to regimental hospitals; but the common hackery, with a slight *sirkee* roof, affords in my opinion a sufficiently comfortable, and easy procurable conveyance for the majority of patients on all ordinary occasions*. Under the present system, every man who is not able to walk, however otherwise trifling his complaint, is necessarily left behind, even when a regiment is only marching from one station to another to effect a relief, or he is obliged to furnish himself with conveyance, which is an alternative commonly preferred.

Were the plan now suggested adopted, only bad cases, who would suffer by removal, would be left behind, with whom a small guard, selected from the "*Bachunds*" of the patients, ought always to remain; and in selecting the former, attention ought to be paid to the recommendation of the medical officer, to choose the friends of those patients whose helpless condition might more particularly require extra attendance; and otherwise selecting *high caste* men, whose services in preparing victuals, &c. would be acceptable to the majority. By attention to these little points, much of the reluctance which sepoys feel to be separated from their comrades during sickness would be removed; for it is not only in accordance with the prejudices of *caste*, but with human nature, to prefer, when on the bed of sickness, the unbought attentions of friends and relations, to the services of hired attendants, however numerous.

2dly. The mode in which men absent from their regiments in hospital are paid, is in my opinion very susceptible of improvement.

* The introduction of an expensive European carriage, when the sick can be conveyed in the common carriage of the country, has often been proposed, and as often abandoned. - Ed.

At present, an existence certificate is forwarded on the first of each month, by the medical officer in charge, through the station staff, to the head-quarters of the regiment to which the patient belongs, on the receipt of which voucher, his pay is drawn and remitted to him by the officer commanding his company. Now without taking into consideration official and other causes of delay, is it not obvious, to put a case (which frequently came under my observation), that where a patient is in hospital in Oude, and his regiment on our Eastern Frontier, a long period must elapse before any pay can be received through so circuitous a channel ; accordingly the medical officer is not only often obliged to supply his patient with medicine, but also with the means of subsistence, and even sometimes to detain him in hospital after recovery, should a previous remittance not arrive to enable him to rejoin his regiment.

This might be provided against, by authorizing the station staff officer to draw the patient's allowances from the nearest pay office.

3dly. The hardships which our native troops suffer from the present pay regulations, are not confined to the instances now given, but bear in an aggravated form on those absent on furlough.

No indulgence is more gratefully prized by this class than the liberty which is periodically granted, when circumstances allow of it, to visit their homes. To enjoy the society of his family but for a short period, the native soldier cheerfully undertakes a long journey, and is anxious to leave with the members of it all the money he may have been able to accumulate : but as he is not entitled to receive any part of his arrears until he rejoins, he must of course reserve no inconsiderable portion of his funds to defray his expences during the six or eight months that he is absent from his regiment.

The inconvenience of this system was not much felt before the late extension of our territories : but the distance of some of our remote stations from the homes of our sepoys, renders a modified extension to them of the privileges already enjoyed by European officers, when

absent from their regiments, that of being paid from the nearest pay office, highly necessary. While returning to join, they ought to be entitled to receive at least a portion of their arrears during progress. Suppose, for instance, a sepoy proceeding from Oude to his regiment at Baitool, he ought to receive a month's pay at Cawnpore, Keitah, and Saugor respectively, keeping him of course the usual two months or even more in arrears.

An arrangement of this sort would doubtless create some additional trouble in the pay and audit departments, but if authorised, would, I confidently predict, tend more than the most severe regulations to lessen the crime of desertion.

How often do men absent on furlough from their regiments at distant stations, present themselves for admission into the nearest hospital, solely and indeed almost avowedly with the view of remaining there until a remittance can be received from their regiments: and the perusal of their certificates, shewing that they are six and eight months in arrears, too fully corroborates the truth of their assertion, that they are without the means of proceeding to their destination. But this alone can give them no claim to admission; and the consequences are, that many men so situated never do rejoin their colours, simply because they are destitute of the means of subsistence during the journey. And on the other hand, of those who do return to their regiments at distant stations, how many are reduced to skeletons, and often the victims of disease, produced as much by the stunted inferior diet they are obliged to subsist on, as the effects of the very long journeys they on such occasions perform.

One subject more, Mr. Editor, and I have done.

A large debt of gratitude is due by the native army to our present illustrious Commander in Chief, for making by his late orders the invalid establishment more accessible to men unfit for active service. But why should not our veterans be entitled to retire on the score of length of services alone, whether they are, or are not, incapable of further duty? I know of one native officer, who has been nearly half a century in the service, has

been frequently engaged in action, and received ~~wounds~~, none of which, unfortunately for himself, as he says, have disabled him. He is "hale and hearty," and therefore not a fit object for the invalids. But surely such a long period of service with unblemished reputation, ought to entitle him, and all like him, to retire on a liberal pension to their native villages, where their presence would stimulate the youth around them to enter the service of those masters, who no less wisely than generously make a comfortable provision for the old age of their faithful servants.

I am, Mr. Editor,

Yours obediently,

A MEDICAL OFFICER.

Komchpoora, }
20th April, 1827. }

NOTE BY THE EDITOR.—We shall be glad to hear again from this contributor. The several important points noticed by our correspondent seem highly to deserve, and no doubt will obtain due consideration, from a Government so anxiously alive to the welfare and comfort of its native troops, as that of British India.

We believe there are instances of native officers in the civil branches of the service in Bengal retiring on liberal pensions, and obtaining gifts of lands; and we think these might be more frequently conferred on such deserving native officers of the army as are alluded to by our correspondent, were not particular claims and services too often allowed to remain without being specially represented to those authorities empowered to recommend such rewards being bestowed by Government.

Under the Madras Presidency, "hale and hearty" veteran native officers, retired from active service on pensions, may be seen on public occasions, following in the suite of the Commander in Chief, as spectators, at reviews, &c. &c. mixing with the European Staff, and obtaining that attention and respect from the highest officers which a knowledge of their characters commands. We have never seen this in Bengal.

ARTICLE V.

ON MAJORS COMMANDING CORPS TO WHICH THEY DO NOT REGIMENTALLY BELONG.



MR. EDITOR,

As your columns have been occupied on subjects connected with the welfare and efficiency of the Bengal army, I trust you will allow me to fill a small space on a subject of considerable importance, one which, as far as I can learn, has occasioned considerable remark, as trenching upon what some consider the fair and just expectations of many deserving officers.

The measure to which I allude is, the novel, and I believe unprecedented one, of partially removing regimental officers (Majors) to the command of regiments to which they do not belong : a measure which seems equally at variance with the long established usage and constitution of this army ; as it appears injurious, even as a general principle, but much more so when partially applied.

By this measure, Captains may be superseded by interloping Majors junior to themselves in the service, and see the advantages arising from service with their corps, and the dangers and hardships of campaigns which they have shared, wrested from them, perhaps, by a man not only junior in the service, but one who has past the greater part of his service in some Staff appointment, or in the security and comfort of cantonments. Is this a just reward for an officer remaining with his corps, when perhaps he had the means and wish to take his furlough ?

All supercession in an army constituted as this is, may be considered a grievance, which ought to be avoided as much as possible : it must occasionally occur, but by the constitution of this army, Majors are to all intents and purposes, regimental officers equally with Captains, and

surely ought to be obliged to take their chance in their own regiments.

I have heard it argued by a Major looking for one of these regiments, that it matters not to the Captain whether he be superseded in his command by a Major or Lieutenant Colonel. This argument evinces but little knowledge of human nature, and no consideration of the circumstances and established custom of the service. There are but few instances of Lieutenant Colonels junior in the service to Captains, but of Majors there are a great many. A Captain knows he may expect supercession by the former, according to the usage of the service; but by the latter it is an innovation which he never could have contemplated.

May not the measure prove injurious to the discipline and harmony of the service, by creating jealousies and heartburnings in those over whom these interloping Majors are thus placed; and detrimental, in as much as it cannot be expected that Majors commanding regiments not their own, and who must be removed when that grade becomes vacant, can feel the same interest in the discipline and welfare of these regiments as the officers who properly belong to them?

The measure may also have a tendency injurious to the service, by taking away a strong inducement to officers entitled to furlough, to remain with their corps, and thus increase the scarcity of old officers with regiments, already so prejudicial to their efficiency.

The measure is also open to another objection. From the frequent changes of Commanders in Chief to this army, they must necessarily be occasionally almost strangers to the merits of its officers, except through the report to persons in office, thus opening a door to the exercise of patronage that may (for who shall answer for the infallibility of human nature) be abused, and it may so happen, that a junior officer's opinion shall operate to the prejudice of his senior officers.

From these reasons, I have been led to think it possible, that the measure in question will, before it is permitted to take root, duly meet with that consideration, generally given to important changes in the constitution and long established usage of this army.

F. B.

NOTE BY THE EDITOR.—Our correspondent's apprehensions of the evil consequences likely to result from the measure he deprecates, will we hope prove both premature and ill-founded. No Captain who has established any claim to consideration, need, we think, dread that he will be superseded by an interloping Major, *junior* to himself in the service. The measure of ordering officers of one corps to do duty with another, is not novel; and regimental Staff appointments (for want of qualified interpreters) were some time ago temporarily bestowed out of a regiment at another presidency, upon an officer ordered to do duty with it. The discipline of the army being entrusted to His Excellency the Commander in Chief, it is absolutely necessary that those only should be nominated to command corps whom he may consider qualified; and although regimental promotion in the Honourable Company's service goes always by seniority, it does not seem to follow that the command of a regiment must, in the absence of its field officers, always go to the senior Captain, while there are Majors who have no command. Yet except the very measure our correspondent contends against be adopted, he might see a Major, though highly qualified to command a corps, serving without any command at all under a Lieutenant Colonel, while another corps, probably at the very same station, was commanded by a Captain. Nay, this Captain might not only be a junior Captain, but a junior officer to the Major! Would it then be justifiable to keep two well-qualified field officers with one native corps, while there was not one with another? To remove a Lieutenant Colonel on every such occasion, would be to subject that rank to a real grievance, because an unnecessary one, while Majors can be spared to do the temporary duty. To conclude, if there be one point more important than another to the discipline of the army, we consider it to be His Excellency the Commander in Chief's prerogative of selecting officers for the command of corps: it is a power which in such hands can seldom fail to be exercised with discretion, discrimination, and delicacy. It is one indispensably necessary in a Seniority Service; and the latitude lately taken, of occasionally opening the list of Majors, as well as that of Lieutenant Colonels for command of corps, since the separation of battalions, and their formation into regiments, seems little more than an enlarged modification of the previous practice of removing Majors from a battalion having a Lieutenant Colonel present, to another temporarily left in the absence of its field officers under charge of a Captain.

ARTICLE VI.

ON THE WANT OF QUARTER MASTERS FOR THE EUROPEAN BATTALIONS OF BENGAL ARTILLERY, &c.



To the Editor of the Military Repository.

SIR,

During those moments which I now and then devote to reflection on things "past, present, and to come," it has more than once appeared to me rather extraordinary, in a corps like the Bengal Artillery, scattered in small detachments all over the country, and in consequence of which, the duties of Adjutants and Quarter Masters, especially in the dismounted portion of the regiment, are increased in a very great degree, that these two appointments should be held by the same officer. In the cavalry and infantry regiments, which are generally together, the two situations are separated, although their collective duties are far less heavy than in the artillery. The same is the case throughout the whole army on the Madras and Bombay establishment, with this exception, that at Madras the Interpreters and Quarter Masters are also styled *Paymasters*. Why the largest and most dispersed corps in India should be an exception to the general rule, I cannot pretend to explain; but I will venture to say, that few if any of the officers will dispute that the *discipline* of the corps would be improved, as well as *greater regularity* and *accuracy* in the returns attained, by its being placed on the same footing with the other regiments in the service in this respect. I maintain that no single officer, however well disposed and zealous, can properly or with satisfaction to himself perform the various and complicated duties of Adjutant and Quarter Master in the Artillery regiment.

The acquisition of *Paymasters* to corps and battalions on the Madras establishment, is too obvious to require any comment. I may, notwithstanding, be permitted to

remark, that however desirable such an appointment would be to the other corps under the Bengal presidency, it would be of incalculable advantage to the artillery.

Most of us, Mr. Editor, have experienced the annoyance of "*retrenchments*," frequently for sums which, though drawn in strict conformity to regulations, are retrenched at some future period, merely for want of some trifling certificate. The constant removals from one company and battalion to another, which take place in the artillery, render it very difficult, sometimes impossible, for an officer to refer to the books of the company, in the abstracts of which the money was drawn, or to the individual from whom the required certificate is to be obtained, and who may be several hundred miles off—in Europe or elsewhere. In the mean time, the amount is deducted from the unlucky wight's pay, (which at best is little enough,) subjecting him to no small inconvenience, if not eventually to a loss.

We will suppose, by way of example, (and such sometimes do occur no doubt,) an officer of artillery is ordered off, with no very long previous notice, from the Presidency to join a troop or company in the Upper Provinces.

Money being the grand mainspring of all our movements, he naturally enough first of all, thinks about drawing his arrears of pay. Instead, however, of, as he expects, receiving the full amount of his abstract, he finds it somewhat reduced by the introduction of a few items on the debit side of his account, which are more fully explained in an "*Extract of Retrenchments*," (neatly written and ruled with mathematical precision in red ink,) put into his hand.

Now, Mr. Editor, I know not whether you were ever so situated. I hope not for your own sake, but many of your readers have no doubt; and therefore, it is unnecessary to describe (even if I could) the feelings of an officer (perhaps a subaltern upon 200 or 250 Sonats per mensem) at finding his slender stipend thus clipped, frequently from no *substantial* reason, further than what I before observed, at the very time too when he most requires a little ready money.

It does not become me to dictate to those in whose power the remedy lies. I can only say, it would relieve the army from the greatest inconvenience and annoyance, such as their brethren in His Majesty's service are seldom if ever subjected to. The very small establishment of officers (generally incomplete) allowed to regiments and battalions in our service, together with the number of those absent on Staff employ, furlough, &c. entail quite sufficient duty on the remainder, without its being increased by the additional trouble of a voluminous correspondence with the Military Auditor General.

But I fear, Mr. Editor, I am encroaching too much on your time, and shall therefore bring my letter to as speedy a conclusion as possible. As my friend, the "Horse Artillery man," once told you, "It is the fault of most men who submit for the first time their lucubrations to public scrutiny."

With best wishes for your success, I remain, Mr. Editor,

Yours faithfully,

A FOOT ARTILLERYMAN.

May 8th, 1827. }
North of the Equator. }

P. S. I trust that the remarks I have ventured to make in the above letter, will not be construed into a reflection on any individual or department. I disclaim any such wish or intention. Should what I have advanced prove incorrect, it can be replied to through the channel of the Military Repository.

ARTICLE VII.

ON PROMOTION BY SENIORITY IN THE NATIVE
ARMY OF THE EAST INDIA COMPANY.

To the Editor of the Military Repository.

SIR, •

Much has of late been said, both here and at home, upon the subject of the plan on which promotion in the Native Army is conducted; and as yet I think more has been advanced in condemnation of the present system than its positive or supposed demerits deserve. I allude of course to the means by which the men rise from the ranks to commissioned officers.

At this time, it would I conceive be idle to attempt to form any opinion of what this army *would have been*, had its rules of promotion been formed on a different system; nor would any conjectures founded on the perfection attained by European troops, be likely to lead to a probably correct judgment on this point. In arguing this question, then, it is my intention to avoid comparing it with the generally admitted advantages which have undoubtedly arisen from the maintenance of a plan of promotion in the English army, widely dissimilar from that pursued in our own — I mean our Indian one; and I have determined to do so, because it is too common to commence reasoning on such positions by extolling the merits and advantages to be derived from the employment of some other approved system of acknowledged excellence; and thus by the mere effect of comparison, decide the point, where no such comparison ought to have been allowed.

My aim is to shew what that system *really* is, by which the men rise to rank in this army, and the effect it has had in promoting its efficiency, or retarding its improvement.

I shall carefully avoid any visionary notions on the subject, and strictly confine myself to the system itself, and the consequences which have arisen from it.

Experience ought by this time to have done something towards enabling us to come to a correct conclusion, by the results which have proceeded from the employment of this supposed injurious measure ; and the needlessness of attempting to prove it either good or bad by comparison (in this case inapplicable) must be apparent to most. There is positive information to be obtained as to its practical effects, and by those effects ought the value of this system to be estimated. The light, however, in which this regulation is viewed by the men themselves, must not be lost sight of in this endeavour to be uninfluenced by the speculative ; for it is evidently the wish of the state to render those in its service contented with their lot, and few important changes are ever introduced without referring to the feelings such alterations are calculated to excite. It is difficult to avoid the intrusion of theory, when considering a point like this. Novelty is seldom forbid to lend assistance by a scribbler, nor is a blind bigotted adherence to things that be (merely because those things have *long been*) less calculated than theory, or novelty, to prevent the possibility of coming to a right conclusion on this topic of dispute, which most of your late numbers have partially started, or incidentally alluded to.

Impressed, then, with the impropriety of permitting either theory, novelty, or bigotry to influence my pen, I nevertheless think it necessary to admit my attachment, *upon the whole*, to the prevailing system, which I confess it is here my intention to advocate and defend. I do so, however, with every wish to state it fairly ; for I do not mean to assert it faultless, or incapable of improvement, though those faults have, I conceive, been much exaggerated ; nor do I intend to say a better might not with great advantage have been originally adopted ; but I do most unequivocally express my full belief, and strong conviction, that no other involving any positive departure from the principal feature of the rule which has obtain-

ed for so many years can *now* be introduced with any benefit to the service or advantage to the state.

The present plan of advancement to superior rank by seniority, has existed, I presume, under slight modifications, and occasional exceptions, ever since the army, by its numbers and formation into regular regiments, has become entitled to that designation. It has grown with our growth, and become engrafted with our very existence here. It is considered by the men as the fairest chance they have of rising. It is looked to, and cherished, as the greatest boon they possess. It is considered as the end by which they will finally obtain bread for their children, and a peaceful home for themselves. It supports them in their troubles and occasional deprivations, and is beloved, as the order which ensures *justice to all*.

But, before I proceed further with this question, let me briefly explain the system itself, which the words by *seniority* do not, to the uninitiated, accurately express. In practice, it does not imply that every individual, whether fit or otherwise, shall be promoted, merely because that individual is first on the roll. It does not secure the oldest man on the list, advancement without reference to his conduct in the field, or his *fitness* for promotion; but that the senior man, if of unexceptionable character, and in every respect capable of performing the duty of the superior situation, with smartness, intelligence, and activity, shall succeed to any step that may chance to fall vacant. It is not in any way incumbent on a commanding officer to promote where these requisites are not to be found; and if they be possessed, as they certainly ought to be, what possible objections can with reason be urged against a system, which imposes no irksome restraints on the head of a corps, beyond what common justice demands?

That it is fatal to the interests of the service, and sufficient to render any army in the world inefficient and useless to the state, as was not long since declared by a public writer, in a very widely circulated, and influential publication, I can never think. Has it rendered ours so? Has it proved so destructive as to ruin the very service

the good of which it was intended to promote? No, I own I cannot submit to such a dogma, when I look'around me, and behold the contentment and happiness prevailing throughout its ranks; in my opinion attributable in no small degree to this regulation, which closes the door upon intrigue, and shuts out all hope to those who would wish to rise by crouching servility. I cannot contemplate with any portion of complacency, the contention and backbiting which would exist among a corps of Natives (addicted as we know they all are to it), if any other principle were acted on. But I have expressed my desire to avoid speculation, and will therefore enter into none—I wish to argue on *practical* effects. *Theoretically* speaking, I am quite aware I cannot hold my ground with any chance of success. But having explained the system itself, and the effect it has had in attaching the men who serve beneath it, to our rule, I shall only shortly allude to what our arms have* done in a military sense, by way of evidence that we have not suffered disgrace where it is of most consequence that the effects of this measure should be ascertained, and where they would certainly be most evident.

That it has proved no bar to the meritorious, who by gallant conduct render themselves deserving of encouragement, is sufficiently evident, from the number promoted on the spot, not long since, before Bhurtpore; where it is plain no attention whatever was paid to the order in question, when it interfered with the good of the army. •Conspicuous conduct was rewarded without reference to it, and became an additional feather in the bearer's cap, when conferred at the time when, and place where, the honour was merited by his conduct*. This mode of bestowing it too, must certainly shew others, what similar behaviour will obtain in the *field*, and thus one great objection to the many urged against this system, that is supposed to chill ardour and to damp enterprize,

* It is singular, that the European officers of the Honourable Company's service are never rewarded for gallant conduct by army brevet promotion, although their men are, who equally with the European officers, are generally confined to promotion by seniority.—Ed.

is answered, and I hope refuted. *That* kind of emulation, so absolutely necessary to excite in a corps, is not lost sight of or impeded. It is encouraged and promoted, in situations where it is most likely to influence by example, and acts in a most salutary way, by *promptly* rewarding, on every occasion entitled to distinction.

But by the preceding remarks, some perhaps may suppose I am using an argument against my own side of the question, when I thus attempt to prove the propriety of the regulation, by showing the necessity there is for departing from it, and the numerous instances in which another has been acted on. A little consideration, however, will acquit me of inconsistency here, when I call to recollection the proviso on which I assumed the pen to defend it. I did not bind myself to do otherwise than support the system as it is. I think it at least harmless, if not beneficial, when its spirit alone is thus acted up to: I support it as practised, and not as the words "*by seniority*" simply imply, when taken in the sense that none others are to be promoted but those who are first. There is indeed no occasion whatever for its impeding the promotion of any deserving individual, nor has its employment that tendency. I am perfectly satisfied it cannot check ardour, for activity is invariably rewarded on the spot, without hesitation; nor can it be said to stand in the way at all, when it is clear, it is always abandoned, as circumstances occur to require it should be dispensed with.

What other objection, then, can now be advanced to recommend its disuse? In consequence of it, it may be argued, that the commissioned and non-commissioned are invariably old, infirm, feeble, and good for nothing; that they are sure of their promotion, if they live long enough; and that any exertion is perfectly foreign to their nature, and never exercised, because unnecessary to procure them advancement; that they have no sense to give an order, or firmness to carry one into execution, and scarce strength enough to keep up with the company on a line of march; and that all these united injuries proceed from this one measure. To this doctrine, however, I cannot submit. I may be wrong in my enu-

meration of some of the faults attributed to it; but generally speaking, I have heard many, if not most of them mentioned, and some others I could enumerate, laid to the door of this unhappy regulation.

I am ready to admit, and the very first to allow, that too many of that sort of men to whom the above description very appropriately applies, are to be found in every regiment of the service among its senior members; but I must nevertheless protest against the assumption so generally prevalent, that this evil is created by the order in question, though why such a number of decrepit old men should remain in the regular ranks of the army, when the invalids seem to provide for their removal, I cannot divine, except for the reasons I shall hereafter produce to account for it.

Not many months since, it was required of those in command, carefully to inspect and discharge from the service any found unfit for its duties, or likely to become so, from any apparent deficiency in the usual activity and muscular strength a young recruit ought to possess, to render him a proper subject for a soldier; and as this only referred to those of a short standing in the army, whose brief period of service entitled them to no particular consideration, it may be supposed to have been the cause of getting rid of many, who would otherwise have soon become useless to the service, and a burthen to the state. It is in the hope and perfect confidence I have in the wholesomeness of such a measure, that I trust to see it frequently repeated, and its prudent provisions carried into effect, and the efficiency of corps thereby preserved, without committing injustice, or violating engagements. Were such a regulation in constant force, though with more defined powers, I am certain that promotion by seniority would soon cease to be charged with producing those evils which in reality do not arise from it.

Most of our sepoys enter at an age when it is impossible to form more than a conjecture as to how they will eventually turn out: a regular review once a year, of those in every regiment who have served in it *less than five*, might therefore take place, when it may reasonably

be supposed, that few of those possessing any positive imperfection could escape detection, and consequent dismissal. In that time too, nature will have completed her work, as far as height, size, and developement of physical powers are concerned, and thus leave no excuse for there being any of that description retained, who shew symptoms of early decrepitude. To the non-enforcement of such a measure as this, do I partly ascribe the numerous cases of infirmity to be daily found in the service; and think I have traced the disease to a far more probable source than promotion by seniority, so invariably burthened with the blame.

There are other causes, however, which tend to promote this injury, I am conscious of, and I shall continue to expose them, with all the means in my power. Previous to the time when invaliding committees were composed of officers, both medical and military, it was a matter of almost perfect impossibility to clear your regiment of feeble men, however much your acquaintance with their defects, from daily observation on the drill ground, and elsewhere, enabled you to form a judgment. Provided the object you presented for approval and admission to the invalid establishment, was able to crawl through his duty, the door to his transfer was practically shut. I will not however dwell more particularly on an evil which it is satisfactory to observe no longer exists, though I cannot help remarking, that the extreme difficulty attending the removal of weak men, which prevailed through the many years it was persisted in, has tended very much to produce that injury now so universally complained of.

But I am not desirous of continuing to point attention to the *temporary* ill consequences, which (in my humble opinion) have undoubtedly ensued from the too strict adherence to the letter rather than the spirit of the former order, under which committees met to decide on the necessity of invaliding; and with the remark, that the justice of this last observation will, I think, obtain the concurrence of those whose duty brought them in connexion with the invaliding committees, antecedent to

their assuming the form in which they now appear. I shall cease to add any thing more on the subject, but turn to the regulations under which committees at present assemble, where I find it enjoined, that both military and medical men are in future to compose them, and share the duty formerly left to the latter alone; which insures to every individual presented as a candidate for the establishment, the united judgment of the two professions best calculated from experience to decide on the fitness of the applicant, as also to detect malingerers, and prevent the Government from suffering the expense and imposition incurred by the transfer to invalids of stout men.

That the operation of this change in the formation of invaliding committees, has already been most salutary, I make no doubt of; and to those requiring any information as to the actual consequences which have proceeded from its issue, I have only to refer to the invalided rolls of the very first year; which, I strongly suspect, will in length, be found to exceed those of the two preceding ones put together. More recent and full general orders, have however since appeared, explanatory of that promulgated by Sir E. Paget, enlarging the power of invaliding committees, and extending their means of benefiting the service by relieving it of improper members: and if aged and useless individuals be still retained, the fault does not appertain to the difficulty of invaliding, or to the necessity of observing promotion by seniority as a general rule. Time, however, must be permitted to elapse before the good can become evident. A few months are not sufficient to enable one to judge accurately of its merits, though I expect the greatest possible advantage will eventually appear from its influence.

The Veteran Battalions existing at Madras, are particularly pointed out as establishments of great use, by one of your correspondents in a former number, as tending to keep the ranks clear of old men. These, I am disposed to believe, except in name, are essentially little different from our own invalid battalions on this side of India, which are meant, I presume, for the same

purpose, and have a similar object in view. I do not pretend to speak, however, from any actual knowledge of the facts of the case, and only mean to suggest the probability, that I am not far out, in supposing them in reality the same, though disagreeing in name ; and if so, that the evil admitted by the writer would by their adoption meet no remedy. It would be desirable, nevertheless, to ascertain how and from what description of men these battalions are really composed ; and another opinion as to the benefit of forming them here, might then be added to the many arguments already used to shew the necessity of adopting some other mode than now exists, for ridding our ranks of those not perfectly capable of doing their duty, yet by no means infirm enough to entitle them to subsistence for life without performing *some* service, by way of equivalent.

But impressed as I still am with the possibility of surmounting the difficulties complained of, as to the obstacles opposed to relieving the regular ranks of their aged members, by the means at present placed at the disposal of commanding officers to effect so desirable an end, I am unwilling to allow there is occasion for any more rules, orders, or regulations than now exist for that purpose, considering that the recent ones on the subject of invaliding committees, include all that can be necessary to provide for the gradual cure of the evil. I do not resign the ground on which I first took up my stand, and will therefore proceed to maintain the original position I set out with, viz. that promotion by seniority is neither the cause of impeding the improvement of the service, nor the means of preserving useless objects to serve as native officers in it.

It is nevertheless undoubtedly true, admitting the prevalent principle of promotion to be the only *just* rule we can follow, that it is in some small degree the cause of preventing our non-commissioned from attaining that rank, while *very* young ; and as much difference of opinion must necessarily exist as to the age most eligible, or rather as to what would be generally considered old, it will not consequently be here at all irrelevant to my

purpose, to make some little attempt to ascertain the usual period of life at which these people obtain their promotion; and as I do not profess to have entered into any very minute or particular enquiry on the subject, I shall be excused, if in asserting my belief, that two-thirds of our Havildars in Bengal, are beneath forty-five, my calculation proves somewhat inaccurate.

I have usually remarked, that very few ever offer themselves for our service at an age exceeding twenty; and I am inclined to think, that the majority of recruits are not near so old. Allowing, then, eighteen as the age they have reached on first bearing arms, it will not be unreasonable to suppose, that twenty-five years, even in the common course of events, will enable them to arrive at the rank of Havildar. Proceeding, then, on the assumption, that I am not far out in laying down forty five years as the age most of the non-commissioned have attained on reaching that rank, I may continue to observe, that it does not appear to me by any means a time of life sufficiently great to incapacitate any man, originally a good subject for a soldier, from performing all the duties appertaining to such a situation, with that degree of alacrity, activity, and intelligence, which it imperatively demands.

Occasional exceptions will necessarily occur, from disease, long sickness, and other casualties, which no foresight can prevent, or guard against; but the invalid establishment here stands so prominently forward as an effectual remedy, of such easy application, that I feel it needless to do more than name it, as the mode by which no misunderstanding of the orders ought now to preclude the immediate transfer of such as are worthy to partake of its benefits. There are many, I know, of long experience, and much knowledge of the native army, who are of opinion, that it would be very desirable, and highly beneficial to the service, were the Havildars filled from the younger part of the regiment, (which in fact would almost amount to an abandonment of the prevailing system of promotion,) in order that the commissioned native officers should reach Subadarships, &c. in a

much less period of time than that in which it at present takes to attain them. But with all due deference to those who differ from myself, I cannot, after due reflection, bring my mind to think, that any great advantage would arise from having a very youthful body of native officers; as the great importance of the commands which the nature of their duties constantly impose upon them, renders it requisite, that long servitude, and well known respectability, should be possessed, before charges of responsibility and trust can be given them with confidence and safety. Age, if not so great as to disqualify, or to render activity impossible, naturally carries with it some authority, and ought to have due weight with those desirous of seeing the commissioned officers raised from among very young soldiers.

But I have unintentionally permitted my remarks on this subject to extend much beyond what I originally intended, when I first sat down to state my reasons for considering promotion by seniority uninjurious to the service; and having touched upon most of the points which suggest themselves to me as any favourable argument for retaining the system, which as practised, I think well calculated to secure and maintain the efficiency, as well as preserve the internal content of corps; I will conclude my observations upon the subject, by once more alluding to the justice, fairness, and impartiality borne upon the very face of the regulation; which in my humble opinion, it would be injudicious, and now almost impossible, to abandon.

MILITARIUS.

. We have taken some few liberties with the letter of *Militarius*, which we trust he will excuse. We have heard it surmised, that if the Native commissioned and non-commissioned officers were transferable to the Pension Establishment, on the rates of pension of their ranks respectively, instead of being previously required to serve three years in such ranks, many a worn-out officer might be got rid of. All ranks after 40 years service, might be allowed to retire, without being invalided, on the full pension of their ranks respectively.—ED.

ARTICLE VIII.

ON BAYONET SAFEGUARDS, IMPROVEMENT OF THE MUSQUET, CHAMBERS OF ORDNANCE, AND FUZES.



To the Editor of the Military Repository.

SIR,

Having perused some excellent papers in the Military Repository (Nos. 7 and 8, and Art. 11th, Vol. I.*) on the necessity of improving the musket, which weapon, though in universal use among modern armies, no military man will deny to be defective, may I request a place in your pages, for the purpose of expressing my opinion of the objections to which, in its present form, it is liable, and to point out in what way I conceive they may be overcome. These consist†, 1st. In its being too heavy, more particularly for troops enervated by the heat of a tropical climate. 2dly. In the imperfect manner of attaching the bayonet, which is not only exposed to be wrenched off in action, but is constantly flung off even at exercise‡. 3dly. In the sight being entirely *obscured*, when the bayonet is fixed, and thereby rendering it, as a sight, *useless*. 4thly. In the small extent of the range§.

For securing the bayonet to its piece, I propose two methods, which having been approved by several officers, I lately submitted to His Excellency the Commander in Chief, who, I am informed, has been pleased to forward them to Europe. They are as follows :—

* Something very similar to the bayonet safeguard, proposed by Captain Parbhy, Model-Master at Dum-Dum, in the XI Article of the 1st No. of the Repository, here referred to, was seen a few days ago, in use with the French muskets, on board H. M. C. Majesty's Corvette, the *Chevette*, lately arrived in India from France.—ED.

† The English musket is said to be the heaviest, the French the lightest, and that the French musket produces a better range.

‡ The consequences attending this defect, are detailed in Art. 6, No. VII. Military Repository.

§ This imperfection in the musket may be the cause of so many balls missing. Vide Art. 5, No. VII. Military Repository.

1st. On the left side of the barrel, opposite to the sight, (which I remove,) is placed a stud, and on the corresponding part of the bayonet, a groove runs perpendicularly upwards, to the extent of about an inch and a half. At the bottom of this, a strong iron frame is welded, in which a lever is placed, on an axis, fixed through the side frames, here raised, and cut away beneath, to allow the stud to pass. Immediately *above* the upper arm of the lever, and *under* the top of the frame, is attached a spring, which pressing on the end of the lever, drives it down into the groove.

2dly. In fixing bayonets, the lever is forced upwards by the stud, from which when relieved, it sharply closes down again into the groove, and thus completely secures the bayonet to the piece.

3dly. To unfix the bayonet, the aid of the thumb of the left hand is requisite, to press down the lower arm of the lever, (which is widened out, the better to effect this purpose,) while the right hand, in the usual manner, strikes off the bayonet. But as *this* hand "is to be brought smartly up to the upper loop, (the thumb pointing upwards,)" the simple employment of its thumb, demands no additional exertion of the soldier, nor perceptible deviation from the exercise, and becomes more usefully employed, than remaining in the position directed, viz. "pointing upwards on the barrel."

4thly. The spring cannot easily be deranged; for being fitted to the interior of the frame, and fixed by a rivet, it is only susceptible of a vertical movement; while that it may not be strained in this direction, the lever is prevented from rising higher, *than to clear the stud* by the top of the frame.

5thly. The lever is equally protected from injury, by the strong flanks of the groove, which it exactly fills. And as the friction to the lever occurs but in the act of *fixing* bayonets, (and which with a pliant spring is so trifling as to admit of the bayonet by its own weight carrying itself home,) there need be no apprehension that it will be less durable than any part of the lock. When the bayonet is sheathed, it lies very snug, the lower arm of

the lever, which alone extends below the socket, being *close* to the soldier's person.

6thly. The second plan is but a modification of the first, and was suggested from its having been asked, how the bayonet would remain attached, in the event of the lever or spring breaking, and time should not offer, of their being repaired. Though little danger of this occurring is apprehended, yet to provide against the possibility of it, I made the groove to commence to the right of the lever, and similar to its present form; but the first part of it, to extend from the rim, up, only one third of an inch, when turning to the left, it continues to the lever, from whence and under which, it runs directly upwards; affording to the lever method, the additional aid of the cross groove, now alone in use with the army; while the bayonet is attached as quickly (if not more so) as in the usual mode of fixing and unfixing bayonets.

7th. It must be evident that the stud called the sight, cannot be seen when the bayonet is fixed, owing to the socket rim being higher than the sight, to admit of its passing over the stud, in fixing or unfixing bayonets. A sight is therefore attached to the barrel, immediately below the bayonet socket, which being higher than the bayonet rim, enables the soldier to take aim, as well ~~when~~ it is attached, as unattached, and thus to keep *down* his fire*, infantry being apt to point their pieces *too high*, rather than *too low*.

8th. To enable our musket to produce a longer range, it will be necessary, in my opinion, that they be supplied with cylindrical chambers, and if practicable, that they be made with less windage.

9th. For what causes the much greater range of a matchlock, over that of a musquet? It is not their length of barrel, since beyond $3\frac{1}{4}$ feet for that of muskets, no increase of range will be produced. It is not their greater charge, since beyond $\frac{1}{16}$ or $\frac{1}{8}$ of the weight of the ball,

* In the French muskets, on board of the Chevette, the second sight was of brass, fixed to the upper brass mounting of the musquet stock, which went round both stock and barrel, being removable at pleasure.—Ed.

no further effect will take place. It cannot be the powder, since our agents for that ingredient probably manufacture better than what the natives can purchase. It must therefore arise alone from the causes above mentioned.

10. To admit of the application of such chambers, all that is requisite are new breeches, having the cylindrical chambers in place of the common breech-pins, and which I have been informed by one of the first gunsmiths in the metropolis, could as easily be applied, as are the cannon breech-pins, to the musket barrel.

11. To obviate the second objection to the musquet, it would only be necessary to make the balls a little larger.

12. The price of a new matchlock is not more (perhaps less) than that of a musket, while its range is considerably greater. If, however, the latter by the addition of a chamber, be brought to an equality in range with the former; if the piece be much reduced in size and weight, (in which the present large and clumsy lock may chiefly participate,) and the mode of fixing the bayonet be improved, our muskets would, I think, be found superior to those of any army.

13. Your correspondents who have written upon the musket, having in the same papers extended their observations to other points, connected with their profession, tempts me to make some on our artillery, should you consider them worthy of a place in the Military Repository.

14. The increased range of howitzers and mortars, having particular descriptions of chambers, over those without any, is well known; but their best form does not appear to be yet decided upon.

15. The spherical chamber is reported to cause a greater range than any other, but it is not so durable. The cylindrical, which has long been in use, seems to be giving way to pieces of the Homer principle. My objection to the last ordnance, is the large charge they require, tending thereby, in quick firing, to much more to heat the gun.

16. The plan I wish to propose is, a combination of the cylindric and spheric chambers with the Gomer shape, extending from its mouth, which should be sufficiently capacious to admit of the shell laying close to the chamber; the greater diameter of the latter to be near its bottom, the lesser at the neck, and continued to its mouth; the difference of the diameters to be $1\frac{1}{2}$ or 2 lines, and the bottom of the chamber hemispherical.

17. A chamber of this description, being adapted to concentrate the whole force of the fluid upon the centre of the shell, where meeting with a direct instead of an oblique resistance, as in the Gomer, must produce, I conceive, a great increase of range, while at the same time it would not be liable to change its shape*.

18. Our fuzes also are susceptible of improvement. Artillery officers are well aware of the difficulty attending the preparation of them, for shells fired from breaching guns, or from fieldpieces, more particularly in small ranges, where the time of flight is very short, and the quantity of composition on such occasions so trifling as to render what is left liable to be blown in on the discharge of the piece, thereby frequently causing the bursting of the shell before it quits the gun†.

19. Now if fuzes were employed which burn more rapidly, such an occurrence could not (at least from the cause above stated) happen, and the desideratum, viz. *fuzes that burn equal lengths in equal times*, would be more nearly attained, by increasing it. - For any errors arising in filling or driving, but more particularly in cutting them, when about to be set, would be diminished one half with those which burn but three seconds, instead of six seconds to the inch; as at present, and as there is

* Our correspondent seems to have struck upon the idea which we believe La Martinière proposed. We recommend that author's work to his attention. The details of the La Martinière chamber are, we believe, recorded in the proceedings of the Bengal select committee of artillery officers. We hope to notice these proceedings in a future number of this work. —ED.

† At the late review of the artillery at Dum Dum, the length of composition of the fuzes used with spherical case, fired from the breaching battery, was with some burning five seconds to the inch, but $3\frac{1}{2}$ tenths for a range of 650 or 700 yards.

in practice with such ordnance, always some of the wood of the fuze left, to secure it the better to the projectile, there can be no apprehension of the fuze interfering with the charge contained in the shell.

20. I would therefore beg to propose, with deference to the Select Committee, the adoption of fuzes for our fieldpieces which burn three seconds to the inch; and which rate of burning may easily be obtained, by increasing the present proportion of mealed powder, leaving the fuzes for mortars, and our light howitzers, to remain as they stand at present.

I am,

Sir,

Your obedient Servant,

T. D.

We dare say some of our correspondents will notice those points in T. D.'s letter which call for remark or reply. We believe the Gomer chamber to possess more good qualities, and less evil, than those of any other form for mortars and howitzers. We wish T. D. had tried the chamber he has proposed. We think he would discover *practical* objections to it, which are not to be found in *theory*.—Ed.

ARTICLE IX.
ON VENTILATING TENTS.

To the Editor of the Military Repository.

SIR,

As you have kindly received my observations on the musket, bayonets, chambers for howitzers and mortars, and on fuzes: I now beg to solicit room for a plan I have to propose of rendering tents more habitable than they are at present.

1. This is produced solely by ventilation.

2. To effect which, each of the 'Bedrossies' is pierced in three or four different places. The holes conically shaped, their bottom being about half the upper sides, one quarter of an inch in diameter. To prevent them being covered by the flys, it is only necessary to fix the Bedrossies to the former, either by nailing or by tying the flys to small eyes, which might be made to protrude from the iron or brass rim which usually embraces the Bedrossies, (a method which would prevent their being misplaced, and sometimes lost, to which they are at present much exposed in marching.) That no rain may enter them, this their position at the apex of the tent, and small exterior, would almost ensure; but a brass cap fitted to, and placed on the top of the tent pole, having a rim sloping down to the fly, completely effects this object.

These apertures admit of a considerable body of heated and impure atmosphere escaping, which the shape of tents much tends to promote.

It induces little or no additional expence: the brass cap being frequently employed as a decoration, thus becomes both useful and ornamental to the tent.

I am, Sir,

Your obedient servant,

A. Q. M.

April, 1837

ARTICLE X.

POINTS UNSETTLED IN MILITARY LAW.



To the Editor of the Military Repository.

MR. EDITOR,

By giving insertion to the following, it may perhaps be the means of elucidating some points in military jurisprudence which at present I believe are not perfectly clear.

As far as I have been able to learn, from the observation of 23 years service, it appears to me to be the generally prevailing opinion amongst military men, that the sentence of corporal punishment must be carried into effect at one time, and that if a delinquent is unable to undergo the whole, after suffering a part, that he cannot be again tied up at any future period to receive the remainder.

By the operation of this (as I consider) erroneous opinion, a delinquent may easily escape the greater part of a justly merited punishment, and thus defeat the ends of justice. I will give an instance, which I witnessed when my regiment was stationed at Cuttack. A sepoy was brought to trial for gross dereliction of duty. He was fully aware that he had nothing to urge in his defence, and that consequently he must be punished. Under these circumstances, during the whole of his confinement, which was but a few days, he took but sufficient nourishment to sustain life; and when brought out to undergo his punishment, he was so weak, that after a few lashes he was obliged to be taken down, and escaped the remainder, from an opinion that it was illegal to inflict them at any other time. It may be urged, that a prisoner under such circumstances should be remanded until able to bear his punishment; and that few would undergo such a penance, or would, or could continue it for any length of time. Still as it may, and can be done, a remedy ought to be

applied for the evil: how long a prisoner might be able to continue such a course, it is impossible to say, but during the whole of such time his services must be lost to the state. It is now wisely ordered that corporal punishment in the native army shall be followed by discharge; but even under this order, delinquents may become burthens to the state, as long as they can or will persevere in the course I have mentioned.

A power is vested in courts martial to punish those who give evidence before them, for insolent or disrespectful behaviour, contempt of the court, and for perjury. This power I conceive is not vested in a native court martial, over an European evidence, and I have seen one under these circumstances at a loss how to act. I conceive the court, under these circumstances, is fully authorized, and imperiously called upon, to send in to the proper authority, charges against such offenders; but still it is a point little understood by them, and insufficient for the ends of justice. An European evidence may refuse to answer the necessary questions put to him by the court, and the pending trial must be postponed until he is brought to his senses by trial.

I will now touch upon a subject of such vast importance, and an evil of such magnitude, that I have long wondered it has not been publicly noticed by thousands, much more capable than myself of doing ample justice to it. By the 21st Article of the 14th Section of the Articles of War, 1825, it is decreed, that "No officer or soldier who shall be put in arrest or confinement, shall continue in his confinement more than eight days, or until such time as a court martial can be conveniently assembled." Tytler, in page 203, wisely observes, that "the latter part of this clause evidently allows a latitude which is capable of being abused;" but he widely errs when he says: "But as in a free country there is no wrong without a remedy, the military law prescribes a mode of redress for all officers or soldiers who conceive themselves injured by their commanding officer, which must always be sufficient for the restraint of every material injustice or oppression." For cases may

occur where an officer ordered into arrest, and kept there, for months, would by this rule be required to seek redress at the hands of the person who is inflicting or has inflicted the punishment of arrest on him. Or should he appeal to the laws of his country, what hope the most distant can he entertain of redress, whilst *convenience*, a term of such scope and latitude, shields the authority appealed against, from penalty? It is no argument to say, it is not to be supposed that any officer vested with high military authority will abuse the latitude thus given. It may, and can be done: it has been done.

Laws, and particularly military ones, should be so framed, as to prevent an abuse of authority in those to whom authority is necessarily delegated, and as little as possible should be trusted to human infirmity. Arrest itself, and particularly in the Company's army, is a punishment of no small magnitude. The law of England holds every man innocent, until he is convicted of guilt. It is undoubtedly necessary for restraint or confinement to precede trial; but where arrest (no small punishment in itself) entails pecuniary loss, it is a double punishment upon a man, who, when at length brought to trial, may be honourably acquitted. It should therefore be of as short continuance as possible; and to guard against the possible abuse of authority, it should be decreed, after the words "*conveniently assembled*," "*and it is also decreed, that when a prisoner cannot conveniently be brought to trial in eight days, that he shall be informed of the cause, or causes of delay.*" Little inconvenience would accrue from granting to prisoners such grounds of appeal to the laws of their country, against length of confinement. Few, even though they should feel assured of the success of such an appeal, would, under the possibility of failure, sacrifice their money in the pursuit of an uncertain recompense, fewer still have the means of doing it; but it would be a wholesome check upon the abuse of authority; and some injured individual might be found, who had both the perseverance and means to accomplish this object, and afford a salutary lesson against its repetition.

The period of arrest or confinement previous to trial, must in this country, of necessity be lengthened beyond eight days.

AN OFFICER.

NOTE BY THE EDITOR.—Doubts are reasonably entertained, as to the legality of any officer causing a portion of a punishment adjudged by a court martial to be inflicted at one time, and the remaining portion to be completed at another time, or at other times; the punishment in question having been adjudged without the court awarding that it was to be inflicted in such portions, and at such periods, as such officer might deem fit. Because the intention of the court in such case must be taken to be, that the punishment awarded should be so carried into execution, without intervals from its commencement of hours or days, as to occasion no unnecessary suffering to the prisoner; and certainly not as authorizing any officer to carry it into execution in a mode which must increase or prolong the personal sufferings of the offender beyond what was intended by the court. Any authority competent to confirm, and cause the sentence of a court martial to be carried into execution, may undoubtedly legally remit a punishment, or mitigate it by ordering it to be only partially inflicted in such proportion as may appear expedient; but although such authority may shew mercy, by lessening the award of a court, additional suffering beyond what by his sentence has been positively adjudged to him, or beyond what the awarding court plainly contemplated, cannot be occasioned without the person authorizing it being guilty of conduct equally as unjust as it would illegal.

Speedy trial and early punishment would best prevent the occurrence of such conduct as the sepoy's adverted to by our correspondent, whose system of abstinence would, however, in itself appear to have been no slight punishment.

The other points touched upon by our correspondent require no remark from us.

We have taken some liberties with the above letter, and would suggest to our correspondent, the necessity which exists for his adopting a less questionable style, in employing our pages as a means to point at forms, which he may consider deserving of notice or attention by authority.

ARTICLE XI.

MILITARY COURTS OF REQUESTS.



To the Editor of the Military Repository.

MR. EDITOR,

On paying a visit the other day, by appointment, to my friend Timothy Queer, who had forgotten it, and left me to kick my heels, and amuse myself how I could until his return, I picked up and purloined the accompanying; but as I know not who "Mr. Editor" means, I have copied it out, and sent it to you.

AN OLD CORRESPONDENT.



MR. EDITOR,

Nothing has given me more surprise than finding all your correspondents silent on a subject of such importance, and (as every month's experience shews) so little understood even by our old officers, as the nature and jurisdiction of the military Courts of Requests, and the authority vested in commanding officers over their proceedings.

It naturally enough seems to them an anomaly, that they should possess no control over the proceedings of military courts which sit by their authority; but it is hardly to be expected, that it can be otherwise: military men, and more particularly in this country, have little opportunity or inclination to make themselves acquainted with the proceedings and jurisdiction of the civil courts; and if commanding and old officers betray this want of information, what, I would ask, is to be expected from Ensigns and Lieutenants of from a year and a half to three or four years standing in the service? And such are put on as members of these courts. Is it not impos-

sible to suppose, that in the absence of all judicial instruction and guidance, their proceedings and awards can be attended with all the judicial knowledge and correctness of the civil courts, directed as they are by professional aid?

These courts seem impolitic for several reasons. In the first place, as involving officers in the administration of civil law, a duty for the performance of which it cannot be expected they should be qualified. In very many of our military stations, there are numbers of non-military residents, (by the bye, a fit subject for notice at some future opportunity, as being the occasion of much inconvenience to the military, by creating a scarcity of bungalows, and raising the rent in a degree very disproportionate to their value,) persons engaged in trade and speculations of various descriptions, whose dealings with natives and each other are accompanied and clogged with all the forms, technicalities, bonds, &c. &c. which have been introduced, happily for the benefit of that industrious class of the community, the lawyers; and all these transactions may be made subjects for decision by a military Court of Requests, and to a certain amount, even without the assistance (such as it might be) of a Deputy Judge Advocate: and even with his assistance, will any one for a moment pretend to say, or expect, that the court will be able to unravel the labyrinth of intricacies in which the law of the case is involved? If he does, he will be woefully deceived: for the greater the knowledge of the civil law, in the Judge Advocate, (for he can seldom have a superior knowledge of it,) the more will he be himself puzzled, and puzzle the uninitiated court. But I would, for the sake of argument, grant that a Judge Advocate might be found qualified to expound the technicalities and mystery of the law: Is it to be expected that he will be able immediately to convince an uninitiated court, that law and justice (frequently, so apparently to common understandings, opposed to each other) are one and the same thing? for it must be remembered, that the oath of the court is obligatory to do *justice* between the parties, but it does not say, *according to law*: they may

therefore say, as many wiser ones have said before them, "This may be law, but it is not justice."

In the next place, as tending to create dissensions between commanding officers and those under them; for no man tolerably well acquainted with human nature will pretend to say, that a commanding officer's act and opinion, opposed and controverted by the court, will not (generally speaking) occasion that unpleasant feeling between the parties which creates discord, in the place of that harmony which the interest of the service requires.

And again, by lowering the European officers in the estimation of their native soldiery, by too unceremoniously subjecting the former to be called before these courts upon the most trifling, and perhaps unjust complaints, of the lowest of their menials. Believe me, such is the result of this measure: our native soldiery are not yet sufficiently enlightened, to give unqualified admiration to the broad principle of equal justice to high and low.

These courts have no power to punish a complainant, let his demand be as unjust and malicious as it may: he is subject to no pecuniary loss, in the dismissal of his suit; no costs accompany it, and no expense attends his bringing it to issue. Would it not, therefore, be better that complaints of this nature against officers, should be left as before, to be settled by the authority of commanding officers; and if the parties should not be satisfied with their decisions, then let recourse be had to a court of arbitration, and let the defendant be subjected to the disgrace of being brought before it: for if the demand be clearly just, it is a disgrace to an officer to be brought before the court, ere he would pay it; but at the same time the court should have some authority to punish him who makes a palpably dishonest or malicious demand. It has now become a practice in servants to quit their masters on the slightest pretence, even without giving them warning, and without even demanding their arrears of wages, bringing them, by complaint, before a court of requests. Should things be thus? We are already, from their combinations and conspiracies, sufficiently in the power of this class of the community: witness the triumph over

Government of the bearers in Calcutta, where, though their necessities of life are more moderate than the rest of the country (generally speaking), yet have they obtained double, if not more than double wages for their labour. I can remember the time in Calcutta, when such an attempt to raise the price of labour would have been considered, and treated, as a punishable conspiracy.

There is yet another point relative to the jurisdiction of these courts, which appears to me to require elucidation. I have been led to believe, and it is generally so understood, that they can take cognizance only of suits where one of the parties is an European; yet I have seen cognizance taken by them where one party was what is called a half-caste, and also where one party, though of European parents, was born in this country. Now it appears to me, that the designation of an European, strictly and literally speaking, implies a person born in Europe,—that the country of nativity gives the legal designation of the subject: if not, in what affinity to England does a person stand, born in England, whose father was French, whose mother was English, whose grandfather was English, whose grandmother was French? and what allegiance can England claim over a person born of English parents, a person who has never set his foot in England, and whose parents have lived almost from infancy in France?

If military officers are considered competent to the administration of civil jurisprudence, within the limits of a cantonment, it is an easy step to that of a district, and from civil to criminal jurisprudence. To be sure there would be some little difficulty when the army should take the field; but even this might be obviated, by more efficiently officering the army, (a measure that must sooner or later take place.) A sufficient number of officers might then be left behind for these purposes, and three-fourths of the civil expenditure thus be saved to our Honourable Masters, whose thanks are certainly due to me for the suggestion of such an enormous saving.

Now only remains to shew how such a desirable—
Cetera desunt.

ARTICLE XII.

MILITARY CATECHISM.



Saugor, December 10. 1827.

SIR,

Convinced that the enclosed short specimen of a Catechism on Torrens, will prove useful to some young officers, I send it to you for publication in your Repository.

It has proved most useful to me.

Yours obediently,

A. B. C.

CATECHISM.

- | Sec. | No. | |
|------|-----|---|
| 83 | 1 | When a regiment advancing is ordered to "Pass threes to the front," what order is to be given by officers of companies?
On which flank of the leading file is the officers' post?
How do they dress?
Which way do they turn to front?
Which way is the wheel into line? |
| " | 2 | When a regiment retiring is ordered to "Pass threes to the rear," what order is to be given by officers of companies?
Then the four questions above. |
| " | 3 | When a battalion in front line is to retire through one in a second line, and which advances to relieve it, how far is the latter to advance?
On the word "Pass threes to the rear," what order is to be given by company officers of the former?
How is room made for files to pass through the second line?
Then the four questions above. |
| " | 4 | When a first line is to pass through a second, and which does not advance to relieve it, how near is it to approach before it passes threes to the rear?
What order is given by officers of companies?
How is room made for it to pass?
Then the four questions above. |
| " | 5 | When a battalion in a second line is to pass threes through a front line, how far is it to advance before it is ordered to pass threes to the front?
What order is given by officers of companies? |

Sec. No.

How are openings made in the first line?

Then the four questions above.

- 83 6 Are the intervals in the first line passed to the right or left by the second line?

In passing threes from the right of companies, ought officers to dress from the left?

In passing threes from the left of companies, ought they to dress from the right?

- 84 1 In retiring by alternate companies, how are the eyes to remain directed?

How is the centre company to touch?

Are officers commanding companies to be on the inner flank?

- 85 2 In retiring by alternate wings, what are the men to touch to?

What is the post of the officers of the right wing?

- 86 1 Suppose the movement to the right, do officers shift their flanks? When do they shift them?

In a movement to the left, is shifting necessary?

What word of command is to be given by officers? and when?

What distance must be lost by companies successively, if they do not wheel, instead of going shoulder forward?

- „ 2 How is the line reformed, supposing the column of subdivisions or sections?

Are the inner shoulders brought forward?

With reference to No. 4, when are officers to change their flanks?

What other words of command are required to bring the subdivisions into line?

Supposing the column formed of companies, how is the line to be formed again by Echelon?

May it close and deploy?

- „ 3 In an advance from the centre, of which wing do the officers change flanks? and when?

When and how is the interval left by the colours to be closed?

Unless a particular order be given, when a double column is in march, which flank is to be considered the regulating one?

- „ 4 In reforming line, how is room made for the colours?

Is the inner shoulder brought forward?

When are officers to change flanks?

What further orders are necessary to form in line? and when are they to be given?

May the line be reformed by deployment?

- „ 5 In forming to the left or to the right, are the officers of the reverse divisions to change flanks? and when?

- „ 6 In forming line on the two centre subdivisions facing to the rear, what is done by the named subdivisions?

May this countermarch be done by threes? See Sec. 76, No. 24,

Sec. No.

- When countermarching, ought the officers to halt at the centre serjeant, allowing their men to pass on, and dress them from the centre on their Havildars? See Sec. 87, No. 3.
- What further commands are required from officers of companies, and when?
- 86 7 In forming line on the rear base facing to the rear, what is the duty of the serjeants of the 2d centre subdivisions?
- Is the countermarch made as in last number of this section?
- When the front of these subdivisions is clear, how and by whose orders do they move up to their serjeants?
- Do the other subdivisions halt, front, and move up?
- In what degree of march?
- Ought the flank subdivisions merely halt, front, dress?
- 87 1 In retiring from the right, are the officers of the other divisions to change flanks? See Sec. 86, No. 1.
- Is this necessary, if the movement be to the proper left?
- On shoulders being again brought forward, is it necessary to change flanks again?
- On the column being halted and fronted, which way is it to wheel into line?
- If formation is required on the leading division, need that division only be fronted?
- Supposing the column of subdivisions, may they form on the right subdivision by shoulder forward?
- Suppose the column to be composed of companies, how must they form by Echelon?
- May they close on the march, halt, and deploy to the rear?
- „ 2 In retiring from the centre in double column, do any officers shift their flanks, and when?
- „ 3 If it be intended to form line to the former rear, how are wings to change places?
- May the subdivisions face by threes? See Ch. 76, No. 24.
- Enumerate the ways by which the formation of line to the new front may be completed.
- „ 4 Should it be required to form line to the former front, are all the subdivisions to countermarch on their own ground?
- In this case, is the deployment to the rear?
- Should the two centre subdivisions only countermarch, how are the rest to form?
- What words of command are to be given by officers to form in line?
- 88 1 In moving off in column of divisions, &c. from a flank (suppose the right), ought the leader of the right company to proceed to a marker in the rear, and then give the word “front turn?”
- Need the succeeding divisions give the word “left wheel,” before they proceed to the rear?

Sec. No.

- Is not some ground like to be generally lost by succeeding divisions?
- 89 2 Supposing in the right wing, that right subdivisions cover in the left in square, and *vice versa* in the left wing, is it possible to form line by Echelon of subdivisions?
- „ 5 Are any officers required to shift their flanks, and when?
Which companies form four deep inwards?
Suppose double march be ordered for the rest of the companies. do the centre companies close by it?
How are the other companies moved into square?
- „ 6 On the caution to reform line, what is done by the front face?
What is done by the other faces on the word quick or double march?
- „ 7 When a light company is detached, and square is required on seven companies, is it formed on the two centre subdivisions?
Enumerate the companies required to form the different faces.
Suppose a square required on nine companies, what companies are required to form certain faces?
- „ 8 How is a line reformed from a square of seven companies?
How is a line reformed from a square of nine companies?
- 90 1 In forming square two deep on the two centre companies, what officers change their flanks?
- „ 2 Preparatory to marching on a named face, where are the colours to move?
Is the rear face to advance two paces before facing about to march on the front face?
Marching on the front face, how do the subdivisions of the right face wheel? How do those of the left face wheel?
Marching on the rear face, how do they wheel?
Marching on the right face, how do the subdivisions of the front and rear faces wheel?
Marching on the left face, how do they wheel?
In any case, how do the temporary rear faces move in marching in square?
- „ 3 What is done on the order to “reform square?”
When there is not room in the square to allow of subdivisions wheeling back, what is to be done? See No. 2.
Should the ground be unfavourable to this method of forming square, what other method may be adopted?
- 91 1 On the caution to change front to the rear on the centre, what is done by the colours?
What by the covering serjeants of the two centre companies?
What by the two centre companies?
Are these companies, after the countermarch, dressed by their officers from the inner or outer flank?
May this countermarch be by threes? Sec. 76, No. 24.

- 91 1 After "threes outwards," which way do the right wing companies disengage and wheel?
 How far should they proceed to the front before they wheel to the left again? Do the text and figure differ?
 After "threes outwards," which way do the left wing companies disengage and wheel?
 On which hand do companies pass each other?
 What words of command are to be given by officers to get into their new places in line?
- 92 1 In changing position on a halted flank company throwing forward the rest of the line, (new position oblique,) does the flank company wheel back on the outer flank?
 Do the other companies face by threes from it?
 Do officers shift their flanks?
 How do companies disengage and countermarch?
 Where does the covering Havildar of the named companies take post? } Form on right halted company.
 What word of command is to be given by officers of companies?
 Between what two companies is there double distance?
 How is the column wheeled into line?
- 93 1 When the position is changed on a flank halted company, throwing back the remainder of the corps, on what flank is the named company wheeled back?
 Do the other companies face by threes towards it?
 Do they disengage to the front or rear?
 What words of command are to be given by officers?
- 94 1 When position is changed on a central halted company, and the left is to be thrown back and the right forward, which way does the named company wheel back?
 Which way do companies face by threes?
 Which way does the right wing disengage companies?
 Which way do left wing companies disengage?
 Which wing countermarches?
 Between what companies will there be double distance?
 How is the wheel into line?
- 94 2 When it is intended to throw the right back, and the left forward, which way does the centre company wheel back?
 Which way do companies face by threes?
 Which way do right wing companies disengage?
 Which way do left wing companies disengage?
 Which wing countermarches?
 Between what companies will there be double distance?
 How is the wheel into line?
 In what respect does Sec. 76, No. 20, refer particularly to Sec. 92, 93, and 94?

Sec. No.

- 94 2 In what respect does Sec. 76, No. 22, refer particularly to Sec. 92, 93, and 94? See last clause Sec. 94.
- 100 When a column at half or quarter distance is required to bring the rear wing to the front by the successive march of divisions from the rear, are all the divisions faced at once?
- 101 On the caution to bring the rear wing to the front, by double files from the centre, what word of command is given by the officer of the rear company?
- In leading the double files from the centre, supposing the column left in front, is the officer's post on the right or left of the leading file?
- On clearing the front company of the column, what word of command does he give?
- To which flank does he incline, supposing the column to have stood left in front?
- What order is given by the officer of each other company, on being passed by the former rear company?
- What order is given on clearing the front of the column?
- To which flank do officers incline?
- Does this movement answer for any other than an open or half distance column?
- 103 4 In forming grand division squares, on the caution, what word of command is given by officers of right companies?
- Where are the serjeants to mark four paces from?
- Is the half distance to be advanced by the left companies of two or three deep?
- What are the words of command for officers of the left companies?
- Examine the figure (43d), and state whether you observe any thing particular in placing the left flanks of subdivisions in square.
- Examine the figure again, and ascertain the place of the right flanks of subdivisions in square.
- Examine also figures 63 A. and 63 B. and state whether the same principle is extended to them.
- „ 5 In reforming column, what is done by the right companies?
- What by the left?
- „ 6 In forming squares of wings, where do the serjeants mark four paces from?
- Is the half distance of two or three deep? See the figure.
- What is observed concerning small squares in Sec. 79, No. 6?

ARTICLE XIII.

BLOWING OPEN GATES.



The following is the Report of the Bengal Artillery Select Committee, on two experiments in blowing open gates with a petard and with a bag of powder, as suggested by Lieutenant Colonel Pasley of the Royal Engineers.

Dum Dum, 22d May 1827.

SIR,

Agreeable to the directions contained in your letter No. 109 of the 15th instant, a trial was made of the comparative effect of a petard loaded with 11 lbs. and a bag containing 50 lbs. of powder, (as laid down in the account of Colonel Pasley's experiment,) against two gates similar to those usually met with in Hindoostanee forts. The petard was as nearly as possible of the same weight and dimensions as that used in Colonel Pasley's experiment; but the gates were much stronger, and of a better description, being constructed of three two-inch saul planks, making the gates six inches thick. They were eight feet high, and each leaf five feet broad. One layer of planks was laid perpendicular, the other two diagonally, and the whole fastened together by strong iron spikes, having large heads at one end, and being rivetted at the other. They were appended to pillars of strong puckah masonry by massy iron hinges, and a bar of saul six inches square, connected with two pillars at the top, and against which the gates shut, while another bar of the same dimensions, fixed across the centre of the gate, and let into the puckah masonry a foot on each side, kept them closed. Each gate, including hinges and cross-bar, weighed 12 cwt. 4 lbs. The petard was first fired, and blew the gates open in good style. One half was completely thrown down; the other drew the upper staple, and stood about three quarters open.

Some part of the gate and cross-bar was thrown inside, the distance of from 20 to 40 yards, and the sheet of iron fixed to the under part of the wooden bed, about 12 yards; the whole of the wood, (excepting that immediately under the mouth of the petard,) though originally rivetted to the iron plate, being thrown to a much greater distance, and in direct contrary direction.

The splinters from the petard and apparatus were many, and embracing an arc of nearly 180 degrees, were thrown from 50 to 170 yards, and with such force, that at about the latter distance, the top of one of the props with its eye-bolt (both iron) striking against the upper part of a man's thigh, fractured the bone severely.

The bag of powder was next exploded, but the gate was not forced open. From the effect, however, of the 50 lbs. there is little doubt but 20 or 30 lbs. more would be effectual. The staples were considerably drawn, and the masonry much shaken and cracked, while the bar was split from one end to the other.

The different result of this and Colonel Pasley's experiment is easily accounted for, in the different construction of the gates. The petard meeting with more resistance, acted more generally than in Colonel Pasley's experiment; and the powder, though sufficient for a common barrier gate, had not the power required to force one of this description.

The masonry being repairable at a trifling expense, the Committee strongly recommends the experiment being repeated with a bag of 80 lbs. of powder; as besides the inconvenience arising from its weight, the splinters thrown out by the petard, and the time required to fix it, render it extremely dangerous.

Dum Dum, 7th June 1827.

SIR,

With reference to your letter No. 678, of date 29th ultimo, and in continuation of our report of the 29th May last, on the experiment of blowing open gates, we have to acquaint you, for the information of the Board, that the

trial this morning with a bag containing 80 lbs. of gun powder was attended with complete success.

The gate (the same as used in the former experiment), was entirely thrown down, and three of the four iron staples on which the hinges of the gate rested, wrenched from the puckah masonry. The gates were thrown forward about four paces; and the splinters, of which there were a great many, from that up to sixty, spreading considerably, one piece indeed (about 5 feet in length) was precipitated full one hundred and twenty paces. No fragments were thrown back; and a storming party, advancing immediately after the explosion, under cover of the smoke, might enter with little chance of finding opposition.

It has, in our opinion, a decided preference over the petard.

We beg to refer our readers to the plates annexed to this number of our Repository, for a view of the gates, as taken after each of the experiments above alluded to; to which a friend has enabled us to add, one of a similar experiment made at Madras, conducted by the Select Committee of military officers there.

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5.4.4. Regional Nerve Injuries

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